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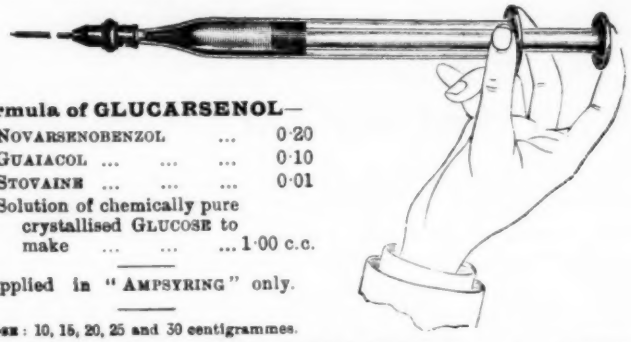

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ASSISTANT PHYSICIAN TO ST. GEORGE'S HOSPITAL.

LECTURE I.[1]

IN this series of lectures I propose to deal with certain types of movement that are the manifestations of those phases of cerebral activity which have been generally considered to be confined to molecular changes in the cerebral cortex and its great ganglia. I refer to processes of thought and feeling. The modern knowledge of the functions of the brain has led us to look to this organ almost exclusively for the manifestations of mental activity; we are apt to forget that to such a great psychologist as Aristotle the brain was nothing but a mass of cold matter whose function was to cool the blood coming from the heart and lungs, serving only as an intermediary link between the organs of sight, smell, and hearing, and the heart where their sensations were perceived. It is through our concentration on the cerebral aspect of mental activity that we have been so slow to realise that the body partakes in the movements that express this activity and, by ignoring these bodily signs, the possibility of establishing an objective standard in our interpretation of neurotic disturbance is, to a great extent, lost. What, then, are data furnished by objective observation of the activity of the nervous system? I cannot do better than quote the views of Bergson as summarised by Hoffding: "All that takes place in the surrounding world and in my own body, including my brain and nervous system, consists only of movements of different kinds and degrees. From the external world movement is spread abroad through our body. It reaches the spinal column and the brain by way of the sense organs and the nerves, and proceeds into peripheral movements. Our body is an instrument which receives movement from the outside, and restores it to the external world. There is not from this point of view any difference between the brain and other parts of the body. The brain is merely stronger than the other organs in preserving the action that it has thus received, and does not always reproduce them in movement immediately but often makes them coöperate in ulterior movements. The body, including the brain, is an instrument of movement and nothing else. To no degree, in no sense, from no point of view, does it serve to prepare and still less to explain a representation. That which, in our perceptions, can be explained by the action of the brain, includes the actions which are commenced or prepared or occasioned, but not our perceptions themselves. Still less does the activity of the brain comprise any explanation of memory and of higher mental activity. If everything in the brain and outside is movement we must not look for anything else than what is observable. The nervous system has only physical properties, and has no other power than that of receiving, preserving, and continuing movement. Movement alone is sensible to us and movement can produce nothing but movement. The whole effect of physical processes is exhausted by the effort of motive adaptation (le travail d'adaptation motrice). If the brain is ill, it is only movements and nothing else that are arrested." No scientific worker is likely to quarrel with this view, but it is important to realise that its adoption leaves us untrammelled by any metaphysical implications; it is as consistent with materialism as with idealism, with monism as with dualism.

RELATION OF PSYCHOLOGY TO PHYSIOLOGY.

It will be plain that a psychology founded on this objective basis leaves untouched all that constitutes for us the chief interest in life. In terms of objective psychology such expressions as meaning and purpose can find no place; by severing it from teleology, history, from the point of view of the psychologist, will become unintelligible. This was, indeed, the view of psychology held by Münsterberg, who argued that the sole function of psychology is to provide us with mechanical uniformities of sequence by the aid whereof to calculate the future behaviour of our fellows in so far as it is not modified by fresh purposive initiative, and that the whole of psychology is a temporary stop-gap, by which we eke out our defective physiology, but which must sooner or later cease to be of use, and therefore cease to exist, as physiology advances. Indeed, to such a pitch must psychology necessarily be brought, if we listen to the warnings of Avernarius on the besetting sin of "introjection."

Now this may or may not be a desirable state of affairs for the psychologist, but I maintain that for us as physicians it is the only possible. The late Dr. Mercier entitled his text-book of insanity "Disorders of Conduct," for of mind he said he knew nothing. It may, indeed, be held with some plausibility that there are no such things as disorders of mind. As physicians we are confronted with cases exhibiting disorders of conduct that is of the mechanism of expression, and our psychology must stand in exactly the same relation to mechanism as does our physical science. It is necessary to insist on these methodological points because we find both neurology and, to a lesser degree, physiology in a state of great confusion owing to their non-observance. Consider the mess that neurology has made of the subject of aphasia, by a careless use of physiological and metaphysical concepts. It arose merely because neurologists talked of memory—a non-physical entity—being stored up in nerve cells without realising that they were talking nonsense. All that they were really entitled to say is that the mechanism of representation is preserved in certain neurones.

PHYSICAL DISTURBANCES THE PRIMARY FACTOR IN THE NEUROSES.

Thanks to the labours of Pierre Marie, and in more recent times to those of Head, we are slowly reconstituting our knowledge of aphasia as being in all its forms a disorder of the mechanisms of expression. It is interesting to note that we have only now arrived at the same conclusion on the subject of aphasia as that advanced by a philosopher, M. Bergson, nearly 30 years ago, as soon as he detected the confusion of thought that lay at the root of our difficulties. It is from much the same causes that so much confusion arises in physiological literature on the subject of sensation—that is, from the incautious use of non-physical terms in the description of physical states. The point of view that I am about to deal with in these lectures has for its object an attempt to define in objective terms the chief data that may lead us ultimately to formulate the nature of the physical disturbance of mechanism that constitutes the primary factor in the neuroses. That such a physical disturbance is the cause of the neuropathic condition and precedes its manifestation I hold very strongly. One fact emerges from all the investigations that have been conducted in recent years by the methods of analytical psychology, and that is that in the vast majority of cases the experiences of the neurotic differ in no way from those that fall to the lot of ordinary healthy men. The data furnished by the war are often cited as an argument to the contrary, but I think that they really furnish irrefutable evidence that an organic disturbance or failure of organic equilibrium preceded the manifestation of the neurotic symptoms and could not have

[1] The succeeding lectures will appear in THE LANCET.

been caused, however much it may have been aggravated, by the individual experiences. In the armies of the Allies and those of the enemy millions of men were exposed to similar conditions, yet only a small number were brought to our hospitals suffering from a neurosis. Doubtless all of us who were in the line showed for a longer or shorter period the disturbances due to fatigue or functional hypertrophy of certain nervous mechanisms, but only those succumbed who were organically unsound. Sir Frederick Mott was able to obtain a history of pre-existing neurotic symptoms in 80 per cent. of the cases of soldiers under his care for neurotic disorders. But the point hardly needs pressing; had those who have contributed to the literature of the war neuroses been permitted to undertake regimental duty in the line, thus to know their men, as one only can do by constant contact, they would have found little difficulty in spotting the future cases of neurosis before ever a shot was fired. Were these cases of organic nervous weakness the victims of infantile and childhood experiences that left an indelible mark on their nervous constitution? There is no reason to suppose that as a whole their experiences differed from those of the average child of their particular social milieu. We are, I think, justified in assuming that an organic disability exists as an antecedent to every neurosis, and in employing methods for objective evaluation of organic efficiency in looking for it.

STUDY OF CONDUCT AND OF SPECIFIC REACTION OR MOVEMENT.

Such an objective study must necessarily be conducted along many lines of observation; but, broadly speaking, there are two methods at our disposal—the study of conduct and the study of specific bodily reactions or movements.

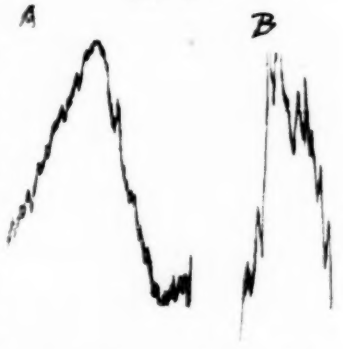
The study of conduct is a purely objective study of all those activities which collectively represent to us all that we can know by observation of the exterior aspect of life. The study of movements is supplementary to the study of conduct. By movement we understand not only the manifest muscular reactions, but also secretory and circulatory responses. The study of conduct in a search for signs pointing to definite organic disorders must of necessity furnish much evidence that is ambiguous and much that is definitely misleading. The recognition of the actuality of our own and our fellow men's life of unique and incommunicable feeling compels us to admit the existence of much that from its incommunicable nature falls outside the sphere of physical reality. The weakness of any objective study of conduct is that much of our information depends on verbal communications from the subject studied.

Now, quite apart from this unique incommunicable aspect of experience, there are a host of affective states and sensory experiences that we have to a great extent in common and that we find the greatest difficulty in communicating. Language is in its essence a method of communication evolved solely in response to practical needs—that is, for the communication of information essential to the maintenance of our social life. The communication of the greater part of our experience serves no such useful purpose, and hence has never acted as a stimulus for the evolution of appropriate language. Those of us who are musicians know that we have a whole range of experience which in its broader aspects we have no reason to suppose to be unique, but which for all that remains practically incommunicable. It is the function of the artist to bridge this gap in our social life by presenting his immediate intuition of reality, but we all know how rarely and how imperfectly art succeeds. It is precisely for this reason that the study of those movements which are the exterior signs of states of feeling becomes so important. When our methods of observation become sufficiently perfected we may be able to check by means of these stereotyped forms of reaction the deductions that we draw from the concerted actions, words, and silences of our patients.

TYPES OF MOVEMENT STUDIED.

The movements which I propose to study are of two types—those which are the exterior manifestations of the specialised response of certain nervous mechanisms, and those which connote the generalised reaction of the body as a whole to stimuli which disturb or threaten the unity of vital action. With movements of the first type we may deal briefly, because their disturbances belong rather to the category of what are known as organic nervous diseases than to that of the neuroses. When we speak and at the same time press the hand on the throat we become aware of movements of the larynx which are easily palpable. They are still more pronounced when we sing, and by pressing the nail of the index finger on the free edge of the upper border of the thyroid cartilage we may readily feel the cartilage move upwards higher and higher with each ascending note of an octave and descend by similar steps as we go down the scale. These movements may be recorded if we fix to the neck a firm leather collar supporting a small spring, one end of which presses downwards on the cartilage and the other is fixed to the collar. At right angles from the spring a small button is soldered which impinges on the drum of an air capsule conveniently attached to the collar. The vibrations of the tambour membrane are conveyed by a rubber tube to another tambour fixed on a stand and this in turn actuates an optical lever on which a beam of light is projected. The magnified excursions of the optical lever are recorded photographically. Fig. 1, A, is a record of the movements of the cartilage in singing up and down an octave. Now, if instead of singing audibly I think of the notes of the octave, and at the same time record the laryngeal movements, I shall obtain a similar picture (Fig. 1, B). The movements are generally smaller than in actual singing, and for purposes of comparison they have been roughly magnified three times in this figure by moving the recording cylinder further away from the optical lever.

FIG. 1.

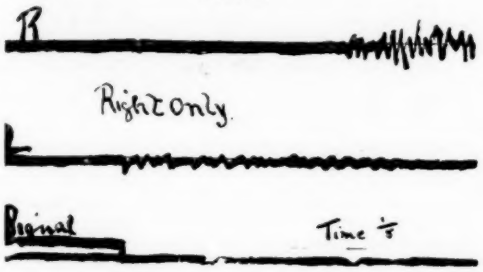


THOUGHT A MODE OF MOVEMENT, WHETHER VOCALISED OR SILENT.

Thought is expressed either by external or internal speech, and whether the speech be externalised or internal it is a mode of movement. If I recite to myself a speech or a poem I can demonstrate the occurrence of similar laryngeal movements, though in this case their relation to the corresponding speech movements cannot be demonstrated with the same ease. Now to think of the notes of an octave or to recite a poem silently is not quite the same thing as to sit quietly and think over any problem or make arrangements for the future. In the first case we are trying to represent to ourselves every tonal step of the octave and every word of the poem, whereas in the latter we are not so concerned with the verbal niceties of our problem as with the conclusions to which it leads. Our motor manifestations in the second case will be more sketchy, the hint of the beginning of a word movement will be sufficient to convey to us the sensory impression of the word just as in reading psychological experiments have shown that the eye does not move along the line of print from letter to letter; but that in a series of jerky movements, it seizes sufficient letters to allow of the recognition of any one word and then darts on to the next. The

motor manifestations constitute what Ribot has happily termed the skeleton of our presentations. What, then, fills in the skeleton outlines? The answer varies for each individual. Ask a number of men to think of a given multiplication sum—some of them will see the figures, others will hear them, others will combine a feeble visualisation with a certain sense of movement, feeling as if the eye were travelling down a row of figures and each were visualised in turn in its place. Those who manifest most markedly laryngeal movement probably fill in the gaps of the skeleton with kinæsthetic representa-

FIG. 2.



tions of the vocal movements that do not actualise. The rôle of actual speech movements in representation is probably under-estimated. Had I been asked some years ago before I had considered the question in what way I represented to myself the octave I should have answered unhesitatingly that I heard it, I have now little doubt but that my laryngeal movements are the first link in evoking the ultimate auditory representation, because though I am told that I have a fairly good ear, my musical memory is to a great extent limited to the representation of those notes that lie in the compass of my voice. Similarly, in visual representation our visual images appear to be to a great extent stimulated by kinæsthetic images arising from the centres for movements of the eye muscles and in extreme cases the stimulation of the motor cell may translate itself into actual movement. I have often performed the experiment of asking an unsophisticated subject to describe to me Trafalgar Square as he would see it if he stood at the base of the Charles I.'s monument. If one is careful to avoid standing exactly face to face, and thus allowing him to fix his eyes on the observer's, in nine cases out of ten I find that as he reels off the series of objects to be seen his eyes move from the right when he mentions Morley's Hotel, to the left when he comes to the Union Club, and upwards as he describes the Nelson monument. It is not only in the mechanism of internal speech that we find these movements, but in the preparation for action. Figs. 3 and 4 represent the results I obtained in some experiments in which the subject was asked to dorsiflex both hands the moment he heard a sound signal. Both forearms were lying with the palms downwards on the table and the extensor group of each forearm was connected to two galvanometers which were constituted by two of the loops in an oscillograph. In the case illustrated the patient was a left-handed man, and in the experiment recorded in Fig. 2 he was asked to raise the right hand only when the signal sounded. It will be observed that from the time that the signal sounded till the actual moment that the right hand was raised there was a well-marked electrical vibration observable in the extensor group of the left arm. The idea of movement in this subject was represented by an actual activation of the muscles, and as he thought of all his movements primarily in terms of the left hand, it was the left extensors that responded. When he was asked to dorsiflex both hands simultaneously, we again see the representation of movement in the left hand (Fig. 3). On asking him to move the left hand alone, the same left-sided representation occurred (Fig. 4). It appears that this connoted the idea of movement on which he was concentrating, and was not in any way a preparatory performance, since the latent times of moving the left hand alone and the right hand alone were identical. In a right-handed subject the phenomenon was reversed. It is of interest to note that for reasons that I shall deal with when we come to talk of tonus one can be sure that this motor representation was of the nature of a voluntary muscular contraction, not an increase of muscle tonus. This motor representation has its influence on all our forms of thought. A very cursory survey of the expressions that we use, whether in the language of description or of abstract reasoning, is enough to show that a dynamic symbolism is universal.

Some time ago Binet made some observations on chess players who were able to play several games blindfold and simultaneously. We should anticipate that such men had an abnormally acute power of visual representation; but though they all stated that they could without much difficulty visualise the chessboard, they agreed that in actual play they never did so, and that visualisation would, if anything,

FIG. 3.

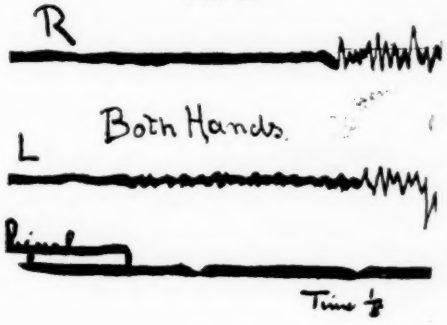
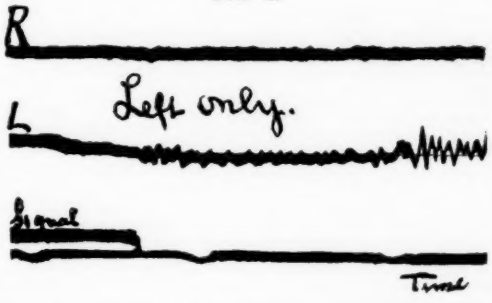


FIG. 4.



rather impede than help them. The chessboard to them was represented in dynamic terms as a congeries of contending forces. A knight was a force acting diagonally and a rook vertically. I do not intend to pursue the subject of these specific forms of motor reactions further, because, as I said before, their disturbances belong more appropriately to the study of gross organic lesions; but it must not be assumed that the specific mechanism by which representations normally occur is without influence on the symptomatology of the organic disturbance which, I hope to show, underlies the neuroses. As to the nature of this influence on conduct I will confine myself to one hint. A surgeon with world-wide experience of the congenitally blind once told me that when a blind man was vicious his abnormality often assumed forms more gross and detestable than occur among the sane with normal eyesight. I have the impression that men with a predominantly auditory type of representation are less nice about physical matters than those with a predominantly visual type, and that the visualist is less nice about the choice of words and

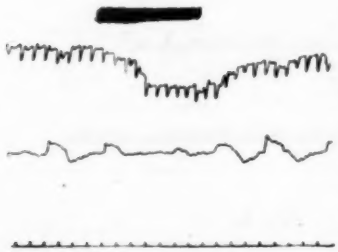
less prone to take umbrage at a harsh expression than is the auditive.

CONNEXION OF MUSCULAR TENSION WITH INTELLECTUAL OR PHYSICAL EFFORT.

I next propose to deal with those movements that connote a generalised reaction of the organism, from the study of which I think we can gain much information as to the fundamental disturbances of mechanism in the neuroses. In the first place I will invite you to study those organic reactions by which the body responds as a whole to stimuli occasioned by the vigorous activity of some specific mechanism. To denote this form of response I prefer to avoid any terms that have subjective implications, such as attention and conation. I shall therefore speak of this type of reaction as effort, and distinguish for purely methodological reasons intellectual and physical effort.

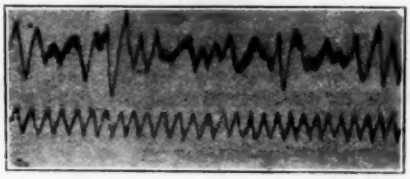
That effort is accompanied by some general alteration of muscular tension has been generally appreciated in a vague fashion, but I have found no record of any attempt to measure and determine the nature of these alterations. Now, there is a very simple and homely method by which the alterations of tension in the quadriceps muscle can be verified. Everyone has at some time or other noticed that when the legs are crossed in such fashion as to allow the crossing leg to hang almost freely downwards the foot can be observed to pulsate up and down with every beat of the pulse; the lower leg, in fact, constitutes the lever of a sphygmograph. If when the legs are so adjusted as to show the pulsation and we are reclining comfortably in an armchair in front of a tiled fireplace we carefully observe the height of the pulsating toecap against the line of intersection of the tiles, we can readily verify any change in the level of the foot. Now, still keeping the eye on the alignment between the toecap and the crevice in the tiles, make some voluntary effort—either attempt to perform some difficult piece of mental arithmetic or grip some object with all your force. It will be seen that coincidently with the effort there has been an appreciable upward movement of the foot—that is, a shortening of the extensor muscles of the thigh has occurred. It is quite easy to measure this shortening and to determine its nature. To do so, it is above all necessary to ensure that the crossing leg is completely relaxed and that the lower extremity is hanging sufficiently freely to exert a constant pull on the quadriceps tendon. This state is present when the foot can be observed to be pulsating vigorously with each heart beat, and is brought about by taking care that the free suspension is in no wise interfered with by the underlying knee supporting the calf muscles. The knee of the crossed leg should lie in the upper part of the popliteal space of the crossing leg. The toecap of the shoe is then attached by a thread to a suitably placed lever whose excursions are recorded on the kymograph. A shortening of the quadriceps and upward movement of the foot will be recorded by a downward movement of the lever. Fig. 5 is a record of the quadriceps shortening manifested in one type of effort, the solving of a problem in mental arithmetic. It is now necessary to inquire into the nature of this contraction of the quadriceps; is it of the nature of a so-called voluntary contraction—that is to say, produced by direct cortical innervation, or is it due to an increase of postural tonus? The work of Wertheim Salomonson has shown that it is possible to differentiate between these two types of muscular contraction. It was shown by Piper that the electromyogram of a voluntary contraction as recorded by the string galvanometer is manifested by

FIG. 5.



The upper tracing is that of the movements of the foot. A downward movement of the lever indicates an upward movement of the foot. The lower tracing is that of the respiration. Time in seconds. Thick black line indicates approximate duration of stimulus—a multiplication.

FIG. 6.



Electromyogram of a voluntary contraction. Below time in 0·01 secs.

an irregular oscillation having the frequency of roughly 50 vibrations per second. These vibrations were considered by Piper to indicate the number of motor nerve impulses reaching the muscle in a second. It is for many reasons certain that they really indicate nothing of the sort, but they served Salomonson to differentiate a voluntary muscular contraction from a tonic contraction which he proved to be entirely innocent of these vibrations. Fig. 6 represents a record taken by the Bock Thoma oscillograph of the vibrations occurring during a voluntary contraction of the quadriceps. In order to investigate the nature of the quadriceps contraction in effort, I recorded simultaneously the movements of a lever connected with the toecap and the electromyogram obtained by a string galvanometer connected with needle electrodes plunged into the substance of the quadriceps muscle. During the effort contraction produced by a dynamometer squeeze it will be seen that there is no trace of the Piper vibration, and we are entitled to speak of the effort phenomenon as a tonic contraction (Fig. 7). The electromyogram is, moreover, of some

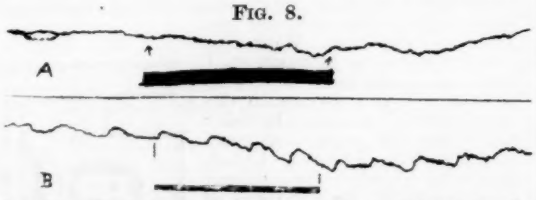
FIG. 7.

Upper line is that of movements of foot. Downward movement of lever indicates an upward movement of foot. Lower line is the shadow of galvanometer string. Time in $\frac{1}{5}$ seconds.

considerable interest, as it shows a phenomenon that I have verified in all my records of tonic contractions—at the commencement of the tonic contraction, as evidenced by the movement of the lever, there is a current of action of the order of about 0·1 millivolt. The current of action is of much longer duration than the diphasic variation of a single muscle twitch. Its duration is about 0·4 sec. It will be noted that after it has subsided the galvanometer registers a perfectly straight line in the position of rest, although the lever registers a continuance of the tonic contraction. It is of some importance to know the nature of the nervous mechanism responsible for this

reflex, and this, unfortunately, must at present remain a matter of great uncertainty. Boeke has found in voluntary muscles nerve endings which appear to be of sympathetic origin, and there is some reason to believe that the centrifugal path of the tonic reflexes is guided by sympathetic fibres; but in spite of the suggestive work of De Boer the question

FIG. 8.



Tracings of A, tonus reflex of flexor; B, of extensor muscles of wrist during mental effort. A downward movement of the lever indicates an upward movement of the hand.

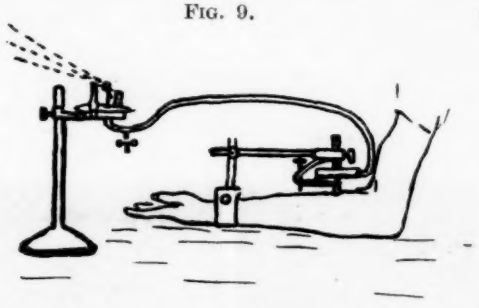
must be regarded as still open. I have found this tonic effort reflex much increased in cases of unilateral pyramidal lesions on the affected side and very much diminished, but still quite definite in cases of tabes. In a case of cerebellar tumour with very marked unilateral hypotonus placed at my disposal by my colleague, Dr. J. S. Collier, the effort reflex was absent on the hypotonic side and normal on the sound side. In the case of the flexed knee, it appears that the tonus of the extensor group is alone increased, while that of the flexor muscles, which by virtue of the position of the leg are already in a state of greater tonus than the extensors, is unaffected or diminished. It is of some interest to determine whether this distribution of tonic innervation occurs elsewhere. If the forearm be flexed at the elbow and supported on a block, and the completely relaxed hand be allowed to hang over the end of the block in a position of supination, it is easy to obtain a record of the hand movements by attaching the lever thread to the head of the middle metacarpal by a pellet of wax. In such a case it will be found that dorsiflexion of the hand occurs in response to effort, whilst when the hand is supinated and allowed to fall backwards over the edge of the block a flexion of the hand at the wrist results (Fig. 8, A and B).

In the case of the elbow-joint, which like the knee-joint only permits movement through one half of a circle, the tonic effort reflex may be demonstrated in the triceps when the upper arm is supported at right angles to the body and the lower arm is allowed to hang downwards. The tonic effort reflex, as shown by the wrist-joint experiments, only affects those muscles which are in a stretched condition. I will next consider what happens when the limb is in a position in which the tonus of the antagonistic groups of muscles is presumably equal. To investigate this point it was obvious that movements of the extremities could no longer serve as indicators; it was therefore necessary to devise some method for the direct measurement of alterations of muscle tonus.

MEASUREMENTS OF ALTERATIONS OF MUSCLE TONUS.

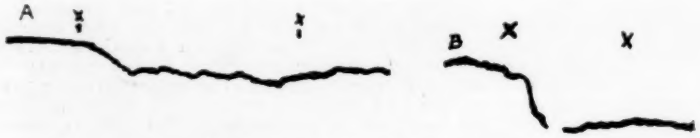
It is obvious that for this purpose the registering apparatus must not vary its position in relation to the muscles of the limb, as otherwise a slight involuntary shifting of the limb would be interpreted as an alteration of muscle tonus. To secure this end, in the case of the forearm a suitably devised clamp was fastened firmly to the bony prominences formed by the heads of the radius and ulna. From the clamp a light rod projected backwards to hold a tambour, with a spring attachment that controlled the pressure, with which a short rod was pressed into the flesh over the belly of the muscle to be investigated. The free end of the rod was in contact with the centre of the tambour membrane. Any increase of the tonus of the muscle would press up the rod, and the resultant air displacement in the tambour was conducted by a tube to a delicate Marey tambour fixed on a stand. In place of the ordinary writing lever over this capsule an optical lever was substituted, consisting of a light mirror fastened to the middle of a piece of silk stretched immediately above the tambour. From the back of the mirror projected a short lever 2 mm. in length, actuated by a short reed projecting from the middle of the tambour membrane. By such an arrangement the air displacement, due to movements of the rod resting on the muscle, could be magnified to any desired extent, and a similar apparatus attached to the antagonist muscles allowed simultaneous records of the alterations of tonus to be taken (Fig. 9). The

FIG. 9.



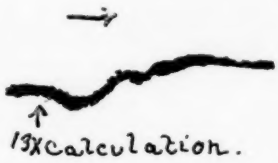
photographic records (Fig. 10) show that with the wrist-joint in the neutral position there is a simultaneous increase of tonus in both antagonistic groups of muscles of the forearm. Similar records have been obtained from the majority of the more accessible skeletal muscles. The effort reflex appears to increase the tonus of all those muscles that are in a stretched or a neutral state. Fig. 11 is a photographic record of the increase of tonus during an attempt to say the "thirteen times" multiplication table. The subject

FIG. 10.



A, increase of tonus in flexors of wrist. B, increase of tonus in extensors. Stimulus between × — × — calculation.

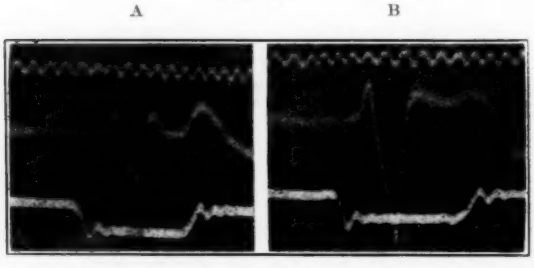
FIG. 11.



was a very poor arithmetician; the first three or four stages were rattled off with ease and no increase of tonus appeared, but as the difficulty of the multiplication increased the effort showed itself in a gradual increase of the muscle tonus. I have many records that show a similar correspondence between the degree of tonus and the intensity of the effort put forth, and we shall see later that in certain neurotics who are incapable of prolonged or intense effort the tonus reflex is correspondingly affected. Now as to the significance of the reflex—I have a very strong aversion to all forms of teleological explanations not confirmed by direct observation. One result of the increase of tonus is, however, fairly obvious. The influence of muscular and mental effort in increasing

the tendon reflex response is universally admitted, though the current explanation that finds acceptance among neurologists is very unsatisfactory. We are always told that in consequence of the voluntary effort the inhibitory power exercised over the tendon reflex arc by the cortex is relaxed, and hence the response is increased. We know, however, from clinical evidence that the magnitude of the tendon reflex varies directly with the degree of tonus, and I have shown that one sign of effort is an increase of muscular tonus. In order to obtain an exact comparison of any two reflexes it is necessary that the stimuli should be of equal magnitude. I constructed a pendulum hammer which when released at the same angle could be trusted to hit the patellar tendon with uniform force. The moment of occurrence of the stimulus was indicated by the hammer closing an electrical circuit which actuated a Deprez signal when it struck a piece of metal foil that was pasted on to the patella. Fig. 12 shows the tendon reflex at rest and during effort. It will be noted that in addition to an increased response during effort there is a shortening of the latent period from 20σ to 15σ. This shortening of the latent period presents some difficulty as to its interpretation. If we assume with Piper that the velocity of a nerve impulse is 120 metres per second, and with Jolly and Hoffman that the latent period of the receptor organs and that of the muscle is about 11σ, we obtain values for the synaptic time lost in the cord of about 4σ. Now, the shortening of the latent period in the second of these two reflexes is of such a magnitude that it is very

FIG. 12.



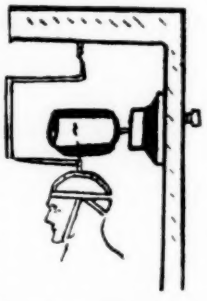
Upper record is the electro-myogram of the knee-jerk, elicited A, when resting; B, when engaged in muscular effort. Lower record is the signal. Time in 1/100th of a second.

difficult to ascribe it to a diminution of the lost time in the central nervous system, and the same remark applies to the effector muscle and the receptor nerve-endings. Even if we consider that the diminution is spread over all three, its magnitude is very great in comparison to the total time involved. There is no reason to suspect the measurement of the velocity of the nerve impulse of any marked degree of inaccuracy, because it is confirmed by the comparison of the latent periods of the achilles tendon reflex and the knee-jerk in the same individual when the increased length of the latent period in the first reflex corresponds to the additional nerve tract traversed. I have found similar concordant differences in measuring the latent period of the triceps-jerk and the knee-jerk in the baby. Whatever be the explanation, the effort tonus reflex appears to be associated with an increased velocity of response as well as an increase of magnitude, in as far as these simpler reflex mechanisms are concerned. While the diffuse tonic reflex that we have been discussing tends to cause extension of the limbs, the position of the head in effort is differently affected.

EFFORT AND HEAD MOVEMENTS.

To study the head movements the subject was seated in a high-backed chair and to the vertex of a wire skeleton skull cap the free end of a piece of wire was connected by allowing it to lie loosely in a small brass tube soldered on to the vertex. The other end of the wire was fixed in a freely moving ball-and-socket joint on a wooden support fixed directly over the head. The wire was so curved as to allow a small recording drum to be at right angles to its axis, so that a writing point fixed to the wire immediately above its joint with the skull cap wrote directly on the smoked surface of the drum (Fig. 13). With this arrangement the only head movements that can be recorded are those which take place at right angles to the direction in which the drum is revolving. With this rather primitive instrument I had to obtain two successive records of the response to the same type of stimulus in order to obtain the resultant head movements. I soon found, however, that the lateral movements of the head are of irregular nature and bear no relation to effort. When, however, an effort, whether muscular or intellectual, is made there is a slight but definite forward movement of the head which lasts for the duration of the effort. The absence of the vibratory action currents characteristic of voluntary contraction in the sterno-mastoids has led me to consider this movement to be tonic in nature, but the difficulty of exploring the small flexor muscles of the head will not allow of dogmatic statement. The bowed head observable in certain people when thinking deeply is obviously an exaggeration of this reflex.

FIG. 13.

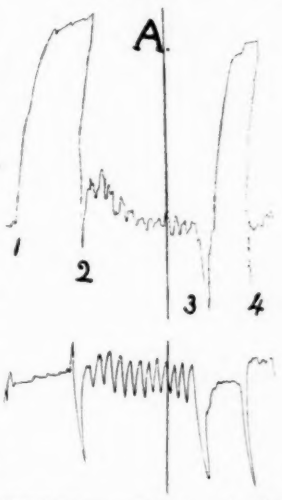


EFFORT AND RESPIRATORY MOVEMENTS.

The relation of the respiratory movements to effort has long been known, and a series of observers have studied the alterations of the respiratory curve in the hope of finding distinctions typical of different mental states. Time does not allow me to criticise these records in detail; I can only subscribe to the generally expressed want of faith in the existence of special types of respiratory curve associated with specific mental states. There is, however, one factor on which everybody is agreed, and that is the reduction of the amplitude of the respiratory movements associated with effort. The usual method of observing respiratory changes by recording the movements of the thorax and abdomen is, however, inconvenient. The apparatus concentrates the attention of the patient on his respiration, and the net effect of the respiratory movements on intrathoracic pressure can only be estimated by the correlation of thoracic and abdominal tracings. In fact, one observer, Rehwoldt, uses no less than five tambours placed on different portions of the thorax and abdomen. The method I have adopted allows the total respiratory variation to be estimated with a minimal amount of disturbance to the subject. A soft rubber No. 1 catheter tube is fixed to the upper lip by a piece of plaster so that its free end is on the same plane as the aperture of the nostril. The tube is connected with a Marey tambour and the pressure alterations in its air column caused by inspiration and expiration are recorded. After the first few minutes the subject is almost unaware of the presence of the apparatus, whereas the knowledge that the chest wall is influencing a tambour applied to it produces a curious concentration on the respiratory movements that as a matter of personal experience I have never been able quite to eliminate. The net results of the effect of effort on the respiratory movement are shown in Fig. 5 with a simultaneous record of the quadriceps tonus. The tidal air is reduced to a minimum and the respiration is slowed. We are all aware that when we attempt to perform any very delicate manipulation or some particularly exacting calculation we have a sensation of holding the breath and that the termination of a short effort of this description is followed by a prolonged expiration—a sigh of relief. Some years

ago, when I conducted some researches on the phagocytosis of carborundum particles under different conditions, I found that the respiratory reaction during the performance of counting the particles ingested in a number of leucocytes was the most irksome part of the proceedings. This flattening of the respiratory curve is not to be attributed to a simple diminution of the respiratory movements; it is conditioned by the general increase of muscular tonus, affecting primarily the expiratory muscles, whilst expiration is obstructed by closure of the glottis. The result is an increase in the intrathoracic pressure. On two occasions I have connected a manometer with the needle in cases in which paracentesis of the thorax was being performed for pleural effusion. In each case any voluntary effort on the part of the patient was accompanied by a well-marked rise of the intrathoracic pressure. The expiratory and inspiratory oscillations were markedly decreased. Turning to the effect of effort on the intracranial pressure we see what are the results of these respiratory changes. In the spring of 1914, together with W. L. Symes, I made some observations on the alterations of pressure of the cerebro-spinal fluid on a number of cases of cerebral syphilis who were being treated by the then fashionable remedy of injection of salvarsanised serum. Hitherto all observations of the intracranial pressure have been made with patients who have been trephined, and the pulsating skin and membranes over the trephined area have had their excursions directly recorded by a tambour. The advantages of the estimation of the pressure of the cerebro-spinal fluid by lumbar puncture in the intact organism over this method are sufficiently obvious, and its delicacy is very much greater. We examined in all six cases and found that the cerebro-spinal pressure responds to the slightest physical or intellectual effort by a marked rise. Our observations showed moreover the great influence of respiration on the cerebro-spinal pressure. Fig. 14 shows well the enormous fluctuations that occur with deep inspirations and expirations and the huge rise when the breath is held. The increase of the intrathoracic pressure during effort is the chief if not the only cause of the concomitant rise of intracranial pressure.

FIG. 14.

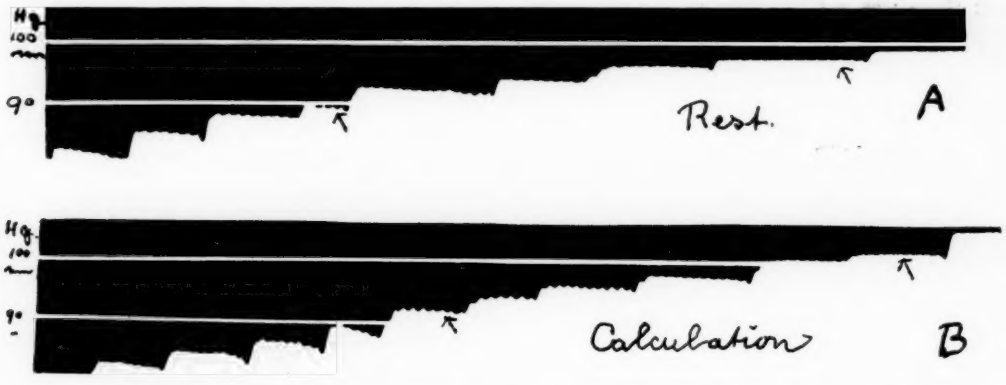


Simultaneous records of the cerebro-spinal pressure (upper line) and the respiration (lower line). Between 1 and 2 breath was held. 3 and 4 are deep inspirations.

EFFORT AND CIRCULATORY REACTION.

Since the fundamental work of Mosso the response of the circulatory system to cerebral activity has been the subject of a great deal of investigation. The increased frequency of the heart to intellectual effort is well shown in the slide. It is of some interest to discover whether this increased frequency is determined by accelerator stimulation or by removal of the vagal control. For this purpose I took some records with a much faster rate of movement of the photographic paper than in the record shown, and measured the time relations of the systole and diastole. Reid Hunt found that by stimulating the accelerator nerve the times of systole and diastole are decreased together, while with a loss of vagal control the loss of time is confined to the systole. My records all show that the systolic time is unaffected, whereas the diastolic time is diminished; thus the effort is responded to by a diminution of vagal tonus. The blood pressure is again very generally known to be increased in effort, and we shall see that in certain types of neurasthenia this increase is either very small or absent. The criticisms of Pachon have shown that the method commonly practised in this country of taking the records of the pulse at the wrist while the artery is compressed higher up is unsound; this is particularly true when investigating the changes accompanying effort and affective states in which there is reason to believe that vasomotor changes at the extremity of the limb are most marked. On the other hand, to record the pulse at the site of the application of pressure, that is, from the pulsations communicated to the Riva Rocci bag, precludes the use of tambours whose sensitiveness is affected by variations in internal pressure. For this reason I have connected the bag with a mercury manometer and photographed the pulsations (Fig. 15). It will be noted that contrary to the observations of Schrumpf and Zabel the systolic and diastolic pressures are both increased. It does not appear to me to be possible to apportion the relative degrees of influence exerted by the heart and the vasomotor system in this reaction. The vasomotor changes in the peripheral circulation in

FIG. 15.



Photograph of pulse oscillations of mercury column at different pressures of Riva-Rocci bag A when subject is at rest, B during calculation. The arrows point to beginning of pulsation and to the maximum oscillation.

response to cerebral activity have been much studied, and the observations of Lehman and Weber—to mention only two of the writers who have most concerned themselves with plethysmographic studies—agree in recording a fall in the volume of the limb as a sign of effort. The vaso-constriction continues throughout the period of effort, and should the effort have been sufficiently intense to cause discomfort its cessation is followed by an increase in the limb volume to a greater size than before the beginning of the effort. We shall consider this after-effect when we study the objective signs of affective states. Weber has recorded alterations in the intra-abdominal pressure accompanying cerebral activity which he ascribes to a variation in the blood-supply to the intra-abdominal viscera.

EFFORT AND VISCERAL REACTION.

What we have seen of the increased muscular tonus during effort and the respiratory variations makes any interpretation of results obtained by introducing balloons into the hollow viscera exceedingly difficult. That many important visceral changes accompany cerebral activity is, of course, certain, in fact, they constitute the most important part of the bodily accompaniments of such activity, but so far their investigation has to be conducted by methods adapted to show chemical rather than gross motor variations. Lange has described fluctuations of the "active sense attention"—sinnliche aufmerksamkeit—the existence of which is shown by the fluctuating appearance and non-appearance in consciousness of a minimal sense impression. I have objectively demonstrated fluctuations of effort; for this purpose the subject was instructed to hold a wand in his hand and to keep the point of it in the middle of a small ring, suspended from a stand. The ring was lined on the inside with a hollow thin-walled rubber bag, which was blown up to a low degree of tension and connected at its orifice with a recording tambour. The quadriceps tonus and the respirations of the subject were recorded on a drum together with the pressure in the bag. A slight movement on the part of the subject would lead to the wand touching the bag and the increment of pressure was recorded by a movement of the tambour lever. When the touches on the ring bag were most frequent there was a diminution of the quadriceps tonus and an increase in the depth of the respirations. The back of the subject was turned to the drum so that he could not observe what was taking place. In this fashion it was possible to demonstrate fluctuations of the effort coinciding with periods of inaccuracy in the handling of the wand. Such periods became more frequent as the subject became fatigued, and in certain cases of neurosis complaining of nervous asthenia they were particularly frequent.

I have so far endeavoured to give some brief account of the movements that are the objective expression of effort. The first portion of my next lecture will be devoted to the consideration of the relationship of such movements to the sensory phenomena that are the concomitants of mental and physical effort.

DUBLIN UNIVERSITY WAR MEMORIAL.—The manner in which the 450 members of the College who fell in the war are to be commemorated has now been decided. The memorial is to take the form of a Hall of Honour in connexion with a reading-room, to be built when funds permit. The hall, placed between the library and the theatre, will extend some paces into the Provost's garden. A design by Sir Thomas Deane has been adopted, which, while not impairing the architectural dignity of the library, will provide a beautiful as well as a useful building. Between £5000 and £6000 have been subscribed, but a much larger sum will be needed. A large number of additional subscribers are hoped for now that the precise form which the memorial is to take has been announced.

The Gold Medallists' War Fund, which has no connexion with the official College memorial, amounts to over £1400, and will be used to help in educating the sons and daughters of the Trinity men who died in the war. A list of all those who served has been prepared, and will be published at the end of the long vacation. Prof. M.W. G. Fry will be glad to receive any additions to it that are sent to him at Trinity College, Dublin.

Lumleian Lectures
ON
SOME POINTS IN THE ÆTIOLOGY OF SKIN DISEASES.

Delivered before the Royal College of Physicians of London on March 10th, 15th, and 17th, 1921,

BY ARTHUR WHITFIELD, M.D., F.R.C.P. LOND.,
PHYSICIAN IN CHARGE, SKIN DEPARTMENT, KING'S COLLEGE HOSPITAL.

LECTURE II.*

I MAY now turn to some of the internal factors in the production of skin diseases. There is, I think, little doubt that until recently the internal factor has been to some degree slighted by the specialist in diseases of the skin, a fact easily explicable for three reasons. In the first place there is the great difficulty of tracing any constitutional change in most cases. In many skin diseases there are no very obvious accompanying signs or symptoms of defective health to guide even the most patient and thorough investigator. Secondly, I think I may say that in most of the simply inflammatory skin diseases the success of local treatment compared with that of internal is very striking, and this will naturally attract attention more to the local lesion than to the constitutional state. Thirdly, the expert in skin diseases is so frequently seeing diseases of purely local origin, such as scabies, ringworm, &c., treated as due to some obscure constitutional condition that he is apt to become prejudiced against internal factors as a potent cause.

In attempting to deal with the internal factors in the ætiology of diseases of the skin one becomes immediately conscious of the fact that any kind of attempt to form an orderly arrangement is a matter of extreme difficulty. It would seem natural to suppose that a certain definite defect of health would call forth the same cutaneous symptoms as a constant result.

This is, however, by no means the case, and we constantly see different cutaneous disorders associated with the same defect in the health of other organs, and also the same cutaneous diseases associated with one of several internal lesions. Thus diabetes may undoubtedly call forth diseases so different as furunculosis and xanthoma, whereas scarlatiniform erythema associated with fever may be caused by streptococcic tonsillitis or the ingestion of quinine.

After some consideration I have come to the conclusion that perhaps the least confusion will arise if I deal with the ætiological factors more or less consecutively, and indicate those dermatoses which are frequently associated with, and, in my opinion, are partly due to each.

SENSITISATION.

1. *Auto-sensitisation.*—I begin, therefore, with the question of eruptions due to sensitisation, and before dealing with sensitisation to bodies introduced from without I should like to draw attention to a short series of cases illustrating what I believe to be a form of auto-intoxication derived from changes in the patient's own tissues. As far as I know this type of poisoning has not previously received any attention.

The first case that I encountered was that of a young lady who received a severe blow with a cricket ball on the shin. The result of the blow was to produce a hæmatoma which was not accompanied by any breach of surface. Nothing further occurred for ten days, when there suddenly appeared a generalised, morbilliform, erythemato-urticarial eruption, strongly resembling that resulting from the injection of diphtheria antitoxin. On being consulted with regard to her skin trouble I made every investigation that I could think of into her diet, general health, and history,

* Lecture I. appeared in THE LANCET of July 9th, p. 61. Lecture III. will appear in a subsequent issue.

and was finally reduced to the possibility that it might be connected with the absorption of broken-down tissue at the site of the bruise. The matter had to be left there for the moment as no further evidence was forthcoming.

Some time later I saw another lady who had fallen down stairs and damaged her left wrist, producing severe ecchymosis without breach of surface. Again on the tenth day the general erythema appeared, precisely as in the former case.

These two cases put me on to the track of this curious association, and since then I have seen three other cases due to aseptic trauma, and I believe, though of course it is much more difficult to prove, many due to trauma where the surface had been broken, and microbic infection might also perhaps be invoked. One of this latter class of case, seen with Dr. C. R. Verling-Brown, of Sutton, may be quoted as an illustration.

An elderly gentleman suffered from an irritable, but not purulent, eczematous dermatitis of the leg. Under suitable treatment this had been brought nearly to the point of cure. Then one day after his bath he thought that a brisk rubbing of the part with a rough towel would stimulate the circulation and hasten the complete recovery. The result of this injudicious treatment was a certain amount of swelling of the part accompanied by a little hæmorrhage and serous exudation. In eleven days' time a generalised eruption appeared, the individual lesions consisting of millet-seed-sized hæmorrhagic papules, associated with urticarial erection of the follicles, and intense itching. When I saw the patient the site where he had injured the original patch had settled down again, and it showed no sign of active sepsis. The skin of the body and limbs generally was covered with small petechial scratched papules which might have been diagnosed as eczema after an insufficient examination. Factitious urticaria was present to a slight degree and irritation was intense.

Such a case as this might well be ascribed to septic absorption, and had I not seen the aseptic cases, two of which I have quoted, I might have put it down to this cause, but as the matter stands I am confident that the physical damage to the tissues was the prime cause. I may add that this case, as well as all my others, except the first in which it was not tried, yielded rapidly to the internal administration of turpentine, a drug which in my experience is the only one with anything approaching a specific value in toxic purpura.

The question which I am entirely unable to answer is why this sensitiveness to the products of one's own bruised tissues should develop. It was not a congenital peculiarity in any of my cases, for I inquired carefully into this, and in every case there was of course a history of many bruises that had not been followed by a general cutaneous disturbance. At the same time I would submit that this is not a valid objection to the correctness of my view, since there are cases in some of which the poison is accurately known where the sensitiveness has developed for some reason entirely unknown.

Lest it should be thought that these cases are in reality merely coincidences to which I am attributing an erroneous explanation, I venture to mention another, but I think allied, phenomenon as to which I have direct experimental evidence. It is of course well-known that in vesicular eczematous dermatitis without marked pyogenic infection the rash spreads from one part to another in an apparently capricious manner. There are also, I may add, instances brought to one's notice from time to time in which there has been some degree of apparent contagiousness in the eruption. Those persons dressing cases of weeping eczema occasionally develop a similar eruption, usually of only a fleeting nature, on the hands. This spread is due, in my opinion, to the locally irritant nature of the eczematous discharge, which is generally toxic for the patient, rarely so for other people, and only for those who are probably of a peculiarly susceptible type. The most convincing case that has come into my experience was one of true gouty eczema, that is, in an elderly gentleman who suffered at the same time from classical acute gout in the toe and vesico-bullous eczema of the legs.

It was noticed that when his bullæ burst and the serum drained down across the legs there appeared in a few minutes a red streak which was followed in about ten minutes by the development of an urticarial wheal, and this in turn was succeeded first by a line of vesicles and then by a long narrow bulla. In order to put a stop to this process I drew off the serum from his bullæ with a sterile hypodermic syringe, and I wondered one day whether this fluid was irritating only to his skin or also to that of the normal individual. Having obtained a syringe full of this clear serum I therefore allowed this to trickle down my own forearm and dry on, and was interested to observe that this procedure was followed by no subjective symptoms or objective signs. This patient was then, I think, undoubtedly sensitive to his own tissue products, whereas I was not.

In this connexion I may draw attention to the fact that quite recently Dr. W. J. O'Donovan showed at the Dermatological Section a case of dermatitis herpetiformis, the diagnosis of which was generally accepted. Dr. O'Donovan himself remarked, however, that he hesitated a little about it as the disease was auto-inoculable, and that if he inserted fluid from a vesicle into another part of the skin it produced an outbreak locally. Dr. J. M. H. MacLeod suggested that this was not due to inoculation, but merely to the slight trauma inflicted. My explanation of this experimental production of the lesion is that it depends upon the patient's sensitiveness to his own morbid serum.

I attribute considerable importance to this series of cases, because I believe that some of the cutaneous rashes ascribed to the absorption of bacterial toxins from septic foci are in reality due to absorption of damaged tissue, though in the present state of our knowledge the disentanglement of the two agencies is impossible.

FOREIGN PROTEIN SENSITISATION.

I may now pass on to the effects of what has been termed protein sensitisation in the sense of a susceptibility to certain forms of protein introduced from without. I have myself carried out no experimental work on this subject, and as far as I am aware most attention has been devoted to it in the United States, where a large amount of painstaking work has been done. The method employed has been to take a large number of proteins derived from different articles of food and to inoculate them separately into the superficial part of the skin.

Fox and Fisher[3] used commercial proteins from various animal and vegetable sources. They scarified the epidermis, not deeply enough to draw blood, in lines one-eighth of an inch in length. On these they placed small quantities of the respective proteins and moistened them with a drop of N/10 caustic soda to facilitate absorption. At the end of half an hour the mixture was washed off and the results watched, control scarifications of course having been made. The smallest reaction admitted as positive was a wheal 0·5 cm. in diameter, and this appeared after a variable number of hours. They tested in this way to some 25 varieties of food protein 60 patients, of whom 41 gave entirely negative results, and 19 reacted positively to one or more proteins.

The most satisfacory result was in the case of a man who suffered from eczema and gave a strongly positive reaction to the protein of cabbage. This patient was in the habit of eating large quantities of both ordinary cooked cabbage and sauerkraut. They found that by alternately withholding and administering cabbage they could cause the disappearance and reappearance of his eczema at will. Fox and Fisher finally concluded that "It would appear to us that they (the tests) will ultimately prove to be of therapeutic assistance in a small proportion of eczema of adults." They also suggest that it may be of more general significance in the eczema of infants.

For all this careful and exacting work I have the highest respect, but there are a few words of warning which I think it fair to offer. The authors themselves draw attention to the fact that in some cases infants with eczema reacted to carrot and

other substances that they had never ingested. In such cases the eczema clearly was not due to the substance producing the reaction. Therefore, unless we can reproduce the second half of the experiment and cause the disappearance and reappearance by the withholding and administering respectively of the specific protein, as was done in the case of the cabbage-eating patient, we are not justified in assuming that the eczema is due to the ingestion of this protein.

I have in this relationship an interesting case of what I call a natural experiment.

A baby aged three months was brought to me for acute eczema of the face and head and a little on the body. The history showed that the eruption began about one week after the acme of development of his vaccination vesicles at the age of four weeks. He had been nursed for five weeks, i.e., one week after the outbreak of the rash, and after that was fed on raw cow's milk and water, cream, limewater, and sugar of milk. It is important to observe the fact that this baby's rash appeared before he drank any cow's milk. It has been suggested, and the suggestion appears to be not without probability, that the use of calf lymph as a vaccine may cause some sensitisation to protein from the cow, either in the milk or in the flesh of the animal. In this case there were no symptoms of indigestion and no constipation. The eczema proved very resistant and the child was brought to me seven times in eight months. Recently the interesting discovery has been made that the child is sensitive to egg. As he was doing well and was getting to a more advanced stage of feeding he was on one occasion given a small quantity of yolk of egg. This was followed immediately by intense vomiting and after a short interval by diarrhœa, and the child was ill for two days, but no exacerbation of his eczema followed. On a subsequent occasion he was given a small amount of custard, and this was followed by a similar train of symptoms, but again no apparent immediate or remote effect on his eczema.

Now here, therefore, we have a child who is suffering from eczema and who is "egg sensitive." Yet not only is his eczema not due to egg as it preceded its ingestion, but the ingestion of the offending protein makes him ill without affecting his skin.

Quite recently I have come across a second case of "egg sensitiveness" in a baby 14 months old, suffering from eczema. In this case the egg also makes him ill and gives him urticaria, but does not aggravate the eczema.

Secondly, there is a difficulty somewhat the converse of this. If we take the case of a patient who is sensitive to substance x, and in whom substance x causes a skin eruption on ingestion, we find that this was not always the case. The sensitiveness is not congenital, nor is it the consequence of any acute attack of poisoning from eating x in a state of decomposition. I suggest that in this type of case there is present either a gastro-intestinal error, so that x is broken up into noxious cleavage products, or that there is some inefficiency in the detoxicating function of the liver.

I have a curious example of this type of case in a middle-aged lady.

Some years ago this patient began to develop attacks of urticaria, usually of short duration. There was no history of acute poisoning or apparent gastro-intestinal error. After a considerable time the patient discovered the cause herself, and found that it lay in the ingestion of any kind of tinned meat or soup. Tinned fruit such as peaches or pineapple are without evil effect, as are also tinned sardines, but the ingestion of tinned beef or soups is followed in about three hours by an outbreak of urticaria, which dies away next day if no further tinned meat products be taken.

There is no question in this case of suggestion, as I have known her state (always correctly) that there has been tinned soup at dinner by the fact of her suffering from urticaria a few hours later, and she has been unaware that there has been anything tinned in the dinner until the rash has come out. Others partaking of the same food have in no instance been affected.

GASTRO-INTESTINAL ERRORS.

In relation to derangement of the alimentary canal there appear to me to be two types of case, namely, the irritative and the toxic, though these occasionally overlap. Some of the examples in the former group are fairly clear in their causation. Such are the cases of rosacea of the strongly angio-neurotic type. The patients are usually, but by no means always, of the female sex. The ingestion of a hot drink, especially tea, or of a highly condimented dish such as curry, or of an acid white wine, is followed in a few moments by an intense flushing of the face, usually affecting especially a triangular area in the middle of the forehead, the nose, the cheeks contiguous to the nose, and the middle of the chin.

The type of dermatosis which develops on this flush area has seemed to me to be dependent on the previous condition of the skin. Those with a naturally thin, dry, and fresh-coloured skin develop a papulo-squamous eruption associated with soreness, itching, and burning, whereas those whose skin is naturally thick, greasy, and pale tend more to the development of severe seborrhœa and pustulation. There is, however, a point here worthy of attention, namely, that this second class of case may be easily confused with a true acne of middle life which is not accompanied by flushing, and belongs, in my opinion, to the second or toxic class of eruptions due to derangement of the gastro-intestinal function.

Ryle and Barber[10] have published a paper on rosacea, giving the results of gastric analysis in 12 cases. In 10 of these abnormal curves of hydrochloric acid production were found, and of these 7 showed extreme hypochlorhydria. Grouping achlorhydria and hypochlorhydria together, they found them present in 58 per cent. of the cases of rosacea.

I cannot agree with Barber's clinical description. He states that the patients have broad, flabby, pale tongues, marked by the teeth at the edges. Now I have paid great attention to this point, both before and since the publication of his paper, and I find it to be quite exceptional in what I consider the markedly angio-neurotic cases. It is, on the other hand, very commonly present in the cases which I regard as toxic acne, with a pale, lemon-tinted complexion and little or no flushing, and it is present in some of those border-line cases which show slight flushing and marked toxic symptoms. Barber admits that the fact that the flushing often occurs almost immediately after the ingestion of food is in favour of a reflex mechanism, but he suggests that it is possible that it is partly or wholly due to the absorption of vaso-dilator substances, such as alcohols formed by the fermentation of carbohydrates by yeasts, sarcinæ, or bacteria in the stomach or small intestine. He also thinks that the effects of oral sepsis and tonsillitis should be remembered in connexion with rosacea, thereby, in my opinion, revealing a confusion between the angio-neurotic and toxic types of eruption. The toxic type is much more variable as regards the cutaneous symptoms. It is also much more difficult to be precise as to the presence and variety of the toxæmia.

The methods that I have chiefly used are the testing of the urine for indican, urobilin, and bile salts, and its examination for bacterial infection, and also, in a certain number of cases, examination of the fæcal flora. I have found indican absent in every case in which there was no apparent reason in either the general or cutaneous condition of the patient to suggest a toxæmia. On the other hand, I have found it present in low or high degree in the most diverse cases of cutaneous eruption, so that one must be careful in attributing the eruption to the toxæmia. Also I have very frequently failed to find it present in cases where one might have suspected its presence a priori.

The chief cutaneous diseases in which I have frequently found it have been cases of irregular erythema, lupus erythematosus, pruritus without objective signs, widespread and obstinate acne, and very occasionally in psoriasis. In none of these diseases is the ætiology precisely known as yet, and there is a strong suspicion that all may be due to toxic absorption from some source. I should state at once that I am not for one moment suggesting

that abnormal intestinal decomposition is the invariable cause of any of these conditions. I am quite clear from a long series of urinary examinations that indicanuria is not invariably associated with any one of them, and, as I shall mention later on, in some of these conditions I have met with other defects of health which I believe to have been quite definitely the cause.

INDICANURIA IN SKIN DISEASES.

It may be of use to give some illustrative cases of various diseases associated with indicanuria. I will deal first with psoriasis, and here I may mention that some 15 years ago I found that there was a small proportion of cases of psoriasis in which the eruption disappeared after the ingestion of creosote. In one case patches on the knees of nine years' duration, which had resisted internal treatment with arsenic and many forms of external treatment, disappeared in a few weeks while the patient was taking creosote. A long series of cases showed me, however, so few in which favourable results could thus be obtained, that the use of creosote for this disease almost ceased to be one of my methods, more especially as I was quite unable to distinguish any particular type in which it would be probably of some use. Since using the indican test with regularity, I find that it is only very rarely that indicanuria is associated with psoriasis, but it appears to be precisely in these exceptional cases that creosote is of value.

A male patient, aged 43, came to me suffering from psoriasis which had been slight for many years and severe for two. On the first occasion I treated him very successfully with arsenic internally, although he had a severe attack of herpes zoster while taking his highest doses. He did not remain quite clear, but kept his slight relapses under control with local treatment only. Seven years later he had another severe attack, and returned to the arsenical treatment and again cleared up almost entirely in two months. Nine months after this attack he developed another severe attack which did not yield at all to arsenic, even in very high doses. I tested his urine, and to my surprise found it went almost black with indican. I therefore put him on creosote, and in a fortnight his rash was somewhat improved though the indican was still present. Three weeks later the rash was gone and the indican had also disappeared. I have not seen him since to ascertain whether in this case the indican and the psoriasis accompany one another as a rule.

A second case occurred only very recently in my practice. The patient was a female, aged 27, who had suffered from psoriasis since she was 14 years old, and had therefore had a great deal of treatment of various kinds. The eruption was severe, and had been so for two months. The urine, somewhat to my surprise, turned almost black when tested for indican, and I therefore tried her with creosote. In five weeks' time she wrote to tell me that she was practically clear.

Now I have already said that it is only quite exceptional for me to find indican in the urine of psoriasis patients, and it is also only rarely that creosote is of value in psoriasis. I therefore think that there is more than coincidence in these cases, and that, although not the prime cause of psoriasis, the intestinal decomposition was the final determining cause of the particular outbreak.

With regard to lupus erythematosus, this is also a disease in which I have not very commonly found indicanuria present, but in those cases in which it has been present it seems to have been a valuable indication. The following appears to me to be an instructive case.

A lady who had been subject to great nervous strain developed a rather diffuse attack of lupus erythematosus on the nose and cheeks. She had lost a great deal of weight, but had no special symptoms beyond obstinate constipation. Fearing the tuberculosis which is so often associated with this disease, I had her thoroughly examined by an extremely expert physician, who found no evidence of tuberculosis. I then had her nose, throat, and teeth examined. The former showed nothing beyond some deviation of the septum, while the dental surgeon found some chronic periodontitis in one or two teeth. These were put right without any benefit accruing as regards the skin lesions. The bacteriological examination of the fæces showed a normal flora, but the urine gave a strong indican test. Treatment was then started, first by freezing with CO_2 snow and then by one or two other local methods, but none of these proved very efficacious. She was then put to bed for a month, carefully shielded from sunlight and cold winds, and this for the first time produced slight but definite improvement, with a small gain of weight. The improvement was, however, neither great nor well sustained, and soon after she got up she developed a fresh patch on the palpebral conjunctiva—not, in my experience, a very common situation for lupus erythematosus. Then, for the first time, she was put on creosote, which she took without trouble. In a short time the disease was completely arrested and the patch on the conjunctiva and several of the smaller patches on the cheeks disappeared. The weight rose steadily, and when for a short time salol was substituted for the creosote the gain in weight ceased, but returned when the creosote was resumed. This patient has not made a complete recovery as yet, but she has improved so much that she is no longer noticeably disfigured. Repeated examination of the urine has shown that indicanuria is no longer present. The nerve strain is, however, unfortunately continuing to a certain degree, and this I think militates against the cure.

I have given this case in some detail because Dr. Barber [11] believes that lupus erythematosus is a disease associated with the presence of *Streptococcus longus*, and in certain cases I believe this to be correct. This patient has had the examinations in each speciality carried out by one of the leading men, and in each case an ardent believer in the doctrine of focal infection, but we have none of us been able to find the *Streptococcus longus*.

Indicanuria is also not uncommon, in my experience, in urticaria and in pruritus without external evidence, and in connexion with the latter I have had one very interesting case.

This was in a young lady who suffered tortures from pruritus but showed no eruption at all. Finding very marked indicanuria I put her on to creosote with the, to me, astonishing result that the pruritus was very much worse, and she developed an urticarial eruption. The creosote was dropped and resumed, and the urticaria disappeared and reappeared concomitantly. Remembering that creosote is excreted mostly as sulphate, I conceived it possible that the drug took up some of her sulphuric acid and thus aggravated her trouble. I accordingly stopped it and put her on largish doses of sulphuric acid, and, post hoc or propter hoc, she was greatly improved.

PRURITUS ASSOCIATED WITH THE PRESENCE OF BILE SALTS IN THE URINE.

One other case of pruritus may be mentioned in connexion with urinary abnormality. In this instance I found in a case of obstinate pruritus that bile salts were present in the urine. Having read that the administration of thyroid gland was beneficial in this condition I ordered it and was gratified to observe the disappearance of both the bile salts and the pruritus. The case occurred many years ago, and of course the work bringing the matter to my notice is still older, but since then I have added the simple sulphur test to my routine examination of the urine, and I have never come across another case, so I think it must be a very rare condition.

BACILLURIA.

Before leaving the urine I may mention the frequent association, especially in women, of chronic urticaria with *Bacillus coli* infection of the urinary tract. This is so common that I think it should be carefully sought after in every chronic case. Some of the patients do very well for a time with inoculation, but it is difficult to discover how much of the good result is due to specific immunisation and how much to "proteid shock." At any rate I have found that a second course of inoculation, undertaken for a relapse of the disease after apparent cure, has been in my hands useless.

THINNING OF THE NAILS ASSOCIATED WITH GASTRIC ULCER.

I should like here to call attention to one other abnormality connected with the gastro-intestinal canal, more especially as I have not seen it recorded anywhere. This is a peculiar thinning and delicacy of the finger-nails. The nail-plate, without developing any ribbing or roughness, becomes so excessively thin that

the ordinary intermittent pressure on the finger tips causes it to bend up at the tip and sides so that it becomes curved in a direction opposite to the normal. As a rule the nail-bed appears unaltered, but in some cases there is a varying degree of hyperkeratosis with separation of the plate from the bed.

The first case of this peculiarity appeared in my clinic at the Great Northern Central Hospital many years ago, and in searching for an explanation, I was struck by the fact that the patient, a middle-aged woman, had been many times in hospital for gastric ulcer and severe hæmatemesis. Since then I have seen a sufficient number of patients with this trouble to convince me that it is not a mere coincidence. In fact, in the last two cases I have been able to prophesy from looking at the nails that we should get a history of severe hæmatemesis. It is, I admit, difficult to understand the relationship of the two symptoms.

INTESTINAL ANAPHYLAXIS.

Before leaving the gastro-intestinal canal I may refer to the brochure recently published by Dr. Danysz [12] on the origin, nature, evolution, and treatment of chronic non-parasitic diseases. In this small work Dr. Danysz brings forward the view that many diseases of chronic nature in which a parasitic cause has not been found are due to the production of a state of anaphylactic immunity, and that they owe their origin to excess of immune substance in the blood. He considers that the main source of this is the alimentary canal, and that owing to congestion and functional disturbance proteid bodies are absorbed without being broken down sufficiently far into their component amino-acids, a view that I had already written in an earlier part of these lectures before seeing his book. Instead, however, of regarding the eruptions as due to the direct poisonous action of these bodies, he considers their action as antigens and invokes the production of excess of immune substance in the blood and a state of anaphylaxis to account for the skin lesion.

His method of treatment is to cultivate the easily grown fæcal organisms in such cases, to mix them in roughly the same proportion as that in which they are found in the fæces, to kill them by heating to 70°C., and to use the resulting mixture as a vaccine. He describes a long list of cases treated by this method and gives a great number of successes.

Having read an earlier paper by Dr. Danysz on the same method, claiming the successful treatment of pemphigus and dermatitis herpetiformis, I tried it some years ago on a very typical and resistant case of the latter disease, and failed to find any effect whatsoever as a result.

At the present time I have a male patient under my care in hospital with a somewhat suppurative, symmetrical dermatitis and marked arthritis. This case resembles in type some of those in which Dr. Danysz claims his cures. Accordingly, after the patient had been under observation in bed for some time so that we could form an idea as to the course of his disease, we made a vaccine, following out Dr. Danysz's directions very carefully. This was administered hypodermically in the way and at the intervals recommended. The course is now finished, and the patient thinks it has done him good, but I confess I see no marked improvement as the result. At all events the eruption and the arthritis are still very obviously present and the suppuration has not stopped. Any alteration for the better is certainly in the subjective condition of the patient, and not in the objective signs.

On the other hand, in favour of Dr. Danysz's views, I feel that it is but just to refer to the fact that Dr. Barber showed at the Dermatological Section not long ago, some cases of psoriasis in which the treatment by this method had been followed by an improvement not obtained by any of the ordinary measures. It is, for me, difficult to follow the reasoning. If the sensitisation and consequent dermatosis are caused by the accumulation of excess of immune body or amboceptor, and the anaphylactic shock in severe cases caused by the sudden meeting of this excess with antigen, it is difficult to understand how the preliminary injection of a very small fraction of the usual dose of antigen acts. One would imagine a priori that this minute dose of antigen would only fix a correspondingly minute proportion of the excessive amboceptor, leaving a great mass to combine with the large subsequent dose, and produce the anaphylactic shock in only slightly less intensity.

Another difficulty also offers itself to my mind. Dr. Danysz reports improvement after ingestion of the vaccine by the mouth, though he considers subcutaneous injection the more potent method. If the administration of the dead bodies of those micro-organisms is therapeutically effective when administered by the physician, why is it not so when they are absorbed in the ordinary course of events from the patient's own intestinal canal?

I do not offer these objections to the theory as reasons against the practical use of the method if it be found to be beneficial after more extensive experience, but I protest against his off-hand assumption that the vaccine treatment of Wright depends on no kind of specific immunity reaction and only on this desensitisation.

XANTHOMA AND CHOLESTEROLÆMIA.

I may conclude this lecture with a reference to the work which has been done in elucidating the ætiology of a disease presumably connected with the alimentary canal—namely, xanthoma.

For many years this curious change in the skin has attracted the attention of the specialist. As far as I can ascertain Pinkus and Pick [13] in 1908 were the first to suggest that the body giving some of the staining reactions of fat was not an ordinary fat but a cholesterol ester. Pringsheim, [14] also in 1908, stated that this cholesterol ester was deposited in the tissues from the blood. In 1910 Cranston Low [15] of Edinburgh wrote an excellent article on the subject and corroborated the statement that the fat-like body was a cholesterol ester of a fatty acid. He pointed out that more apparent fat was found by means of staining with Sudan III than with osmic acid. He also referred to the nodules found in the heart, and suggested that a cardiac murmur heard in his case was due to this cause. In 1912 Chauffard and Roche [16] claimed that the disease was probably caused by an excess of cholesterol in the blood, though this was not apparently proved. They also assumed that it was due to a lypolytic insufficiency of the pancreas.

Rosenbloom in 1913 [17] appears to have been the first to publish an estimation of the cholesterol in the blood in xanthoma multiplex. Curiously enough, he found in a case of G. H. Fox's that there was "no increase of cholesterol in the corpuscles and plasma compared with the normal control." His figures were as follows:—

	Cholesterol.	Cholesterol ester.
Xanthoma corpuscles	65	Trace
Normal control	68	,,
Xanthoma plasma	48	22
Normal control	46	28

giving in the total blood:—

Xanthoma .. .. 135 | Normal control .. 142

In 1920 Dr. Burns [18] published a further report of a very severe case of xanthoma tuberosum in which estimations were made of the cholesterol in the blood. The patient's blood was estimated after 14 hours' fasting at the end of a week on three different diets. The blood uric acid was high, 4·3 mg. per 100 c.cm.; the blood sugar was 0·091 per cent.; cholesterol was found in the nodules in large quantities. Two estimations of the cholesterol in the blood after a week on the ordinary mixed diet gave:—

Cholesterol.	Fat.
(1) 660 mg. per 100 c.cm. = 0·66 %	2000 mg. = 0·2 %
(2) 650 mg. per 100 c.cm. = 0·65 %	1700 mg. = 1·7 %

The normal controls showed:—

Cholesterol.	Fat.
210–240 mg. per 100 c.cm. = 0·2 %	300–400 mg. = 3·4 %

The xanthoma patient showed on the low fat diet:—

Cholesterol.	Fat.
660 mg. per 100 c.cm. = 0·66 %	1400 mg. = 1·4 %

On the high fat diet:—

Cholesterol.	Fat.
999 mg. per 100 c.cm. = 0·99 %	1000 mg. = 1·0 %

Since this paper of Dr. Burns's, the high blood content of cholesterol has been confirmed by other

observers, and it is now generally believed that the tumour-like growths are due to the irritation of the tissues by the deposit of cholesterol in them. At the discussion on Dr. Burns's paper it was pointed out that xanthoma-like masses had been produced by feeding rabbits with cholesterol and then inflicting local injury to determine the site of the deposit. I do not think that the pancreatic lesion has as yet been studied, but all the evidence points to its presence. It has also been suggested that xanthoma diabeticorum is not caused by the sugar disturbance but by the cholesterolæmia which accompanies it.

We seem therefore to be on the high road to elucidating the ætiology of one more of the puzzling skin lesions.

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A NOTE ON THE MORTALITY OF PREMATURE INFANTS.

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THE only source from which detailed information on this subject can be gathered is the medical reports of the lying-in hospitals. The greater number of such hospitals in the United Kingdom issued reports before the Great War broke out, and I have been able to examine figures from six different institutions. The statistics cannot be brought up to date, because in most cases publication of the reports has not yet been resumed. In some of the reports the figures are presented in a form which makes it very difficult to gather from them any detailed information. The total number upon which the figures given below are based is accordingly small—too small indeed to permit me to claim that they are anything more than an approximation. They will, however, serve at least to show how heavy is the mortality of premature babies born in the lying-in hospitals, in comparison with that of the mature babies.

Difficulties of Accurate Obstetric Calculation.

A serious inital obstacle has to be encountered in the difficulty of deciding, in many cases, whether a baby is premature or not, and in the affirmative case, what is its degree of prematurity. The ordinary obstetric calculation from the last menstrual date has a possible margin of error of roughly three weeks—corresponding to the length of the menstrual interval. Calculation from the last coitus is also open to error, for spermatozoa can remain alive in the fallopian tubes for a considerable period. Dührssen found active spermatozoa in the tubes of a woman operated upon three and a half weeks after the last coitus. It is known that in rabbits spermatozoa can survive in the uterus for from 8 to 10 days, and Dührssen's observation is not therefore inherently improbable. Both these errors tend to over-estimation of the duration of gestation—that is, they make the number of premature babies born appear to be lower than it really is; e.g., it would appear that the fortieth week has been reached when it is really only the thirty-eighth week. Occasional cases may occur in which menstruation continues for from two to three months after conception, and the effect of this error upon the obstetric calculation would be under-estimation of the duration of gestation. The latter cases are, however, so rare that miscalculation due to them is quite unimportant from a practical point of view.

Length and Weight as Indications of Maturity at Birth.

Next to the obstetric calculation the length and weight of the infant at birth are regarded as the most important guides. Most lying-in hospitals publish tables of their cases of induction of premature labour for pelvic contraction, in which the length and weight at birth are given along with the calculated duration of gestation. It was, therefore, possible to examine this point pretty fully. Table I. gives the average length and weight, with the extreme variations of both length and weight, of premature babies born at the thirty-sixth, thirty-seventh, and thirty-eighth weeks, in two hospitals.

TABLE I.

	Weight	Length.
Hospital A (London).		
38 weeks	Average: 5 lb. 10 oz. Limits: 4 lb. 9 oz. to 7·0 lb.	Average: 19 in. Limits: 18 in. to 22 in.
37 weeks	Average: 5 lb. 9 oz. Limits: 4 lb. 12 oz. to 6 lb. 3 oz.	Average: 19¼ in. Limits: 19 in. to 21 in.
36 weeks	Average: 5 lb. 6 oz. Limits: 4 lb. to 6 lb. 3 oz.	Average: 18¾ in. Limits: 18 in. to 21 in.
Hospital B (Provinces).		
37 weeks	Average: 6 lb. 8 oz. Limits: 4 lb. 8 oz. to 8 lb.	This in only given in a few cases.
36 weeks	Average: 6 lb. 4 oz. Limits: 4 lb. 12 oz. to 7·0 lb.	

From these figures three points of interest may be gleaned—viz.: (1) Babies born at 36 weeks or at 37 weeks in Hospital B, are on an average nearly a pound heavier than those born in the corresponding week in Hospital A. (2) Babies born prematurely vary in length and weight to as great, or perhaps to a greater, extent than do babies born at term. (3) The relationship between length and weight is subject to very wide variation; premature babies may be long and light, or short and heavy. The most remarkable individual variations noted were the cases of a baby born at the fortieth week measuring 22 in., and weighing 5 lb. 10 oz., and another born at the thirty-sixth week measuring 20 in. and weighing 7 lb., and a third born at the thirty-seventh week weighing 8 lb.

It has been suggested by Frank that the ratio of length in centimetres to weight in grammes is different in mature and premature babies, and that $\frac{\omega}{e}$ gives a quotient of 50 or less in premature babies, and a quotient of 60 or more in mature babies. I tested this formula over a large number of cases, and did not find it at all reliable.

Necessity of Additional Means of Estimation.

Additional means of estimating the period of development of premature babies are badly needed. A certain amount of work has been carried out by radiologists upon the detection of centres of ossification in the long bones, and the developmental stages at which they appear, or can be recognised by X rays. Meanwhile this work is not sufficiently advanced to be of service.

A promising field, at present unworked, is the cytology of the fœtal blood. The mature infant's blood gives an average of 5½ to 6 million red cells per cubic millimetre; at the thirty-sixth week they may be as high as 8¼ million per cubic millimetre. The proportion of nucleated to non-nucleated red cells is about 1 to 1 at the thirtieth week, while at birth the nucleated cells have practically disappeared, not more than 1000 to 2000 per cubic millimetre being found (Schtchukin[1]). A systematic differential count

[1] Quoted by Feldman: "Principles of Ante-natal and Post-natal Child Physiology."

of the blood cells from the thirtieth week onwards might show the change from fœtal to infantile conditions to be sufficiently regular to form a basis for computing the period of development reached at birth. This inquiry could readily be carried out at a lying-in hospital, and might very well yield results of great practical value both to the obstetrician and the medical jurist.

Lying-in hospitals give a glimpse of the premature infant only from birth to the end of the second, or perhaps the end of the third week. Figures of gross mortality are of little practical value until they have been split up into the two groups, indicating (1) *mortality at birth*, including macerated fœtuses, non-viable fœtuses, and those which, though born alive, did not survive their birth (stillborn); and (2) *mortality in infancy*. The former is very largely uncontrollable; improvements in obstetric management might possibly enable a certain number to be saved, as in cases of toxæmia, ante-partum hæmorrhage, and syphilis. A very large number of premature infants are, however, non-viable when born. Group II. is the one with which we are chiefly concerned, and the gross mortality in this group, estimated in the reports of six hospitals, stands at the appalling figure of 40 per cent. In other words, nearly half the premature babies born alive in lying-in hospitals die before the end of the third week of life. Examination of the reports, however, shows that in this gross mortality are included a large number of infants so handicapped at birth as to have but a slender chance of survival. Thus, premature babies born in maternal toxæmia, or in labour with ante-partum hæmorrhage, cannot be said to start life with a fair chance of survival; in addition, there is a small number of infants born with serious developmental defects, or with a congenital syphilitic taint, and these are also severely handicapped from the start. We shall come nearest to an estimate of what are the chances of survival for a baby whose only drawback is prematurity, if we exclude these conditions, and correct the gross mortality figures accordingly.

Table II. shows (1) the gross infantile mortality, (2) the "corrected" infantile mortality for premature babies, and (3) the gross infantile mortality for babies born at term, "correction" of the figures being unnecessary in this latter case, as the maternal complications mentioned above are relatively very uncommon in labour at term.

TABLE II.

	Premature Babies.		Mature babies (per cent.).
	Gross mortality (per cent.).	Corrected mortality (per cent.).	
Hospital A (London)	41	34·0	1·8
Hospital B (Provinces)	41	—*	3·6†
Hospital C ,,	46	38·0	0·7
Hospital D ,,	30	—*	0·8‡

* No data for correction.
† This figure is quite abnormally high.
‡ O.P. Department (Extern maternity).

These figures show that from 30 to 45 per cent. of premature babies die in the lying-in hospitals; and if a selection is made of those premature babies which have no obvious disability in addition to their prematurity, on an average of two hospitals, less than two-thirds survive their third week. The percentage mortality of these selected premature babies during this period may be anything from 35 to 50 times as great as that of mature babies born under the same or similar conditions.

Induction of Premature Labour.

A certain number of premature births are the result of induction of premature labour for slight degrees of pelvic contraction. These are carefully selected cases, the gestation period being, in all but a very few, 36 to 38 weeks, the condition of the mother being good, with no complication apart from the pelvic contraction. These cases would, therefore, be expected to yield better infantile results than those just set forth. They come out as follows, and it is clear that these particular figures need no "correction": Hospital A (London), 14 per cent.; hospital B (Provinces), 36 per cent.; hospital C (Provinces), 20 per cent. The average of the three hospitals is about 23·3 per cent.

A certain small number of deaths are included in these cases, which occur during labour as the result of the birth process, or of obstetric interference, but they are too few to affect the percentage appreciably.

While these results are on the whole better than the "corrected" figures of premature infantile mortality it cannot be contended that they are satisfactory. The object of inducing premature labour in pelvic contraction is to obtain, with the minimum of risk to the mother, an infant that will survive. If the infant does not survive, the principal object of the operation has not been obtained. A percentage mortality of 14 is low enough to justify the procedure, but a percentage mortality of 36 condemns it. Perusal of the reports shows that at hospital A, with the lowest mortality-rate, a large number of inductions are done as late as the thirty-ninth and fortieth weeks. In the other two hospitals all but a very few inductions were done at the thirty-fifth and thirty-sixth weeks. This difference goes far to explain the more favourable results obtained at hospital A.

It would be of great interest to determine the relation between the mortality and the degree of prematurity, if the data could be obtained. In only one of the hospital reports are the returns presented in a form which enables this point to be investigated, and the numbers are, of course, very small. The following result was obtained:—

Week.	Percentage mortality.	Week.	Percentage mortality.
35th	33·3	38th	7·0
36th	18·1	39th	10·8
37th	12·5		

These are all cases of induction for pelvic contraction, and the figures indicate that before the thirty-sixth week the infantile risk is much too heavy to be faced, and therefore one of the other available obstetric operations should be preferred in degrees of contraction which call for induction at such an early period. The figures show how rapidly the mortality-rate falls from the thirty-fifth to the thirty-eighth weeks, and this is, of course, to be expected in the nature of things. The rise in mortality-rate from the thirty-eighth to the thirty-ninth week is also not without significance to obstetricians.

Confirmatory evidence of this result may be found along parallel though not identical lines. One of the hospital reports furnishes a record of the progress of all *undersized* infants arranged in groups according to their weight at birth (Table III.).

TABLE III.

Class.	—	Total.	Dead.	Percentage mortality.
I.	5¼ to 5½ lb. (36 to 38 weeks).*	149	12	8·0
II.	4½ to 5¼ lb. (34 to 36 weeks).*	89	11	12·3
III.	4 to 4½ lb. (32 to 34 weeks).*	77	26	33·7
IV.	3½ to 4 lb. (30 to 32 weeks).*	51	27	54·0
V.	2½ to 3½ lb. (28 to 30 weeks).*	35	33	94·2

* Represents the approximate period of gestation at which this weight is usually reached.

Of course, it will be understood from what has been said in an earlier part of the note that babies may be born at term which are under the normal weight, and therefore the above figures are not

strictly coördinate with those based on infants known to be premature. Nevertheless the predominant factor in the birth of undersized infants is prematurity, and so far as can be made out from the reports from one-half to two-thirds of the "undersized" babies are premature. It will be seen that the mortality in Classes I. and II. corresponds pretty closely with the figures obtained from cases of induction for pelvic contraction at approximately the same period of gestation.

It is interesting to compare Table III., which represents results obtained during the last five years, with those obtained by Budin at the Clinique Tarnier in Paris in 1895 to 1900, as given in his well-known book "The Nursling." Budin organised a "department for weakling infants"; doubtless not all of the infants were premature, but probably the great majority of them were, and the figures are directly comparable with those just given (Table IV.).

TABLE IV.

Weight.	Percentage mortality.
4½ lb. and over	10·0
3½ to 4½ lb.	13·3
3 lb. to 3½ lb.	60·0
Under 3 lb.	100·0

It will be seen from Table IV. that Budin's results 20 years ago were as good as our own to-day, and they can only confirm our admiration for the value of the pioneer work which he carried out in regard to infant management. Probably no clearer or more suggestive thinking as ever been done on this subject.

Problematical Fate of Premature Infants.

A final question arises, which is of immense importance, but to which no answer is at present to be found—viz., "What is the fate of the premature babies after they leave the hospital"? The rule is observed generally in the lying-in hospital that premature babies are not discharged until they are at the time gaining weight; on occasions the mother may refuse to remain or to leave the infant, but, as far as may be, they are kept under observation until they appear to be thriving. Then they pass out of touch with the hospital except for the small proportion which may be passed on to an affiliated infant welfare centre. Lack of coöperation between these centres and the lying-in hospitals is a grievous hindrance to an adequate "follow-up," and is one of the points in inter-hospital coördination which urgently needs attention. Statistics bearing upon the ultimate fate of premature babies would be forthcoming if the hospitals and the centres could work together.

Budin was able to institute a partial follow-up system in Paris for the infants discharged from his clinique; for a portion of their full-time babies, being placed in charge of a wet nurse at the expense of the municipality, could be kept under observation, while those from the "weakling department" were all kept under observation, as far as possible, after leaving the hospital. He was thus able to trace the fate of these infants from 6 to 12 months after their discharge, and he gives the results shown in Table V.

TABLE V.

		Percentage mortality.
Normal babies (all breast-fed)		17·4
Weakling babies (mostly premature)	Breast-fed	15·0
	Bottle-fed ..	41·0

He believed from these figures that his weakling babies, after discharge from the hospital, had as good a chance of survival as normal babies, *so long as they were breast-fed*, but that if bottle-fed they did very badly, the mortality in the latter case being nearly three times as high as in the former; while in the weakling department of the clinique, all babies were breast-fed, a carefully organised rota of wet nurses being provided for that purpose.

Causes of Mortality of Premature Infants.

Not much information is available from the reports as to the *cause* of this heavy mortality among the premature infants. From the mortality tables it would appear that no other cause of death than "prematurity" was found in 78 per cent. of the cases. It is not stated in how many cases an autopsy was made, and the probability is that in the great majority the diagnosis of the cause of death was clinical only. It is fairly safe to assume that the predominant factor in death from "prematurity" is malnutrition—i.e., failure of the infant to digest or to assimilate the food given. The fatal susceptibility of premature infants to infections of all kinds must not be overlooked; it is due to the fact that their tissues have not yet elaborated a defence against bacterial invasion, and are therefore incapable of "resistance." Breast-fed babies do receive, with the milk of the first 14 days, immunity bodies, which are, no doubt, serviceable for defensive purposes. Bottle-fed premature infants are without defence of any kind, and, of course, fall an easy prey to infection. While in the lying-in hospitals they are fairly free from risk of infection, except that of seasonal catarrh, and the probability is that infections play but a small part in their mortality during the period under consideration.

Importance of Breast-Feeding.

Details of feeding of the premature babies are given in the reports of only one hospital. Here 35·7 per cent. were entirely bottle-fed, while of the mature babies in the same institution only 7 per cent. were entirely bottle-fed. Budin always insisted upon the great importance of breast-feeding for "weaklings," and this point appears to require emphasis at the present time. Mothers of premature babies are doubtless more often unable to nurse than those with mature babies, but in lying-in hospitals it ought to be possible to obtain sufficient breast-milk for the premature babies from the mothers of others, either by wet nursing or by the use of the breast-pump, without depriving other babies of their requirements.

In the case of a small lying-in ward a supply of breast-milk can often be obtained from nursing mothers in the extern maternity, who will usually readily allow their surplus milk to be given to a "sick baby in the hospital." The extern maternity nurse can collect it herself with the breast-pump, and take it to the ward in a previously sterilised bottle. If breast-milk thus obtained is insufficient to supply the total requirements of the premature babies, supplementary feeds can be given, and upon mixed feeding of this description they thrive very much better than upon artificial feeding alone.

It would be exceeding the limits of this note to go further into the question of the management of premature babies, but the unsatisfactory results at present obtained should induce all who are concerned with the lying-in hospitals to consider the whole matter afresh.

A NEW METHOD OF EXPOSING THE SUPRA- AND INFRA-CLAVICULAR REGIONS.

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IN 1916 I described in the *Russky Vrach* a method, worked out on the cadaver, for reaching the subclavian vessels. I have now had an opportunity of testing the value of this method on patients, not only for reaching the subclavian but also the axillary vessels and brachial plexus.

The direction of the incision is as follows: It starts in the middle of the neck, between the two heads of the sterno-cleido-mastoid muscle, runs down to the sterno-clavicular joint, which it surrounds in semicircle, and proceeds along the lower border of the clavicle, where it is carried right down to the bone. The periosteum of the inferior and posterior surfaces of the clavicle is to be carefully separated with the

raspatory, and the sternal end of the clavicle disarticulated. Care must be taken not to injure the large vessels lying behind these structures. Thus loosened, the sternal end of the collar-bone, together with the skin flap still attached to it, is retracted upwards by means of a strong hook or a strip of gauze. The whole region of the subclavian vessels, anonyma included, and the brachial plexus becomes easily accessible. The details will be indicated in the following account of a case.

An officer, aged 26, suffered a gunshot wound on Nov. 11th, 1919. The bullet entered from the back, near the fourth dorsal vertebra, and came out one inch above the sternal third of the right clavicle, after which he spat blood, and his right arm became paralysed. There were no signs of aneurysm. On May 2nd, 1920, closer investigation of the nerve condition resulted as follows: Complete anæsthesia of the hand, except in the median area, where slight sensibility remained. Anæsthesia of the external half of the forearm (cutaneous branch of the radial nerve) and of the lower and external part of the deltoid region (axillary nerve). In the other parts of the arm normal or nearly normal perception was maintained. Very well-marked atrophy of all the muscles of the hand and the forearm—except of flexor digitorum communis profundus, which was less affected and probably made possible the very slight movements in the fingers. The deltoid muscle and the flexors of the humerus were also markedly atrophied, and also, in less degree, the triceps, which gave a very slight extension of the arm, after the forearm had been flexed passively. No other movement was possible in the arm. On the basis of this examination I inferred that all the nerves of the brachial plexus had been injured in greater or less degree.

Operation (6/5/20), under chloroform anæsthesia. The incision was made and the sternal end of the collar-bone disarticulated, as just described. Having retracted the skin and muscle flap upwards, together with the mobilised sternal end of the clavicle, we cut the fascia and the clavicular muscle on a director, tied and divided between two ligatures the external posterior jugular vein, and then the omo-hyoid muscle at the level of its tendon. After the two branches of arteria transverse colli and several small veins had been cut between two ligatures, the brachial plexus appeared at the bottom of the wound. It was found to be injured in its external part and compressed all round by cicatrices. The plexus was cleared from scar tissue, the injured part reconstructed by means of several stitches, and all this portion of the plexus protected from new adhesions by a flap of adipose tissue, taken in the neighbourhood. Having replaced the collar-bone and fixed the sterno-clavicular joint by two stitches, we closed the wound, with a drain left in its outer part for 48 hours. The arm was fixed to the trunk for two weeks. Healing took place by first intention. As the collar-bone seemed to protrude a little forward, a sandbag was applied to the sterno-clavicular joint with a satisfactory result. About three weeks after the operation the first definite movements appeared in the hand and fingers, which have since continued to progress.

This case shows that the method (to which I first drew attention in 1916) for operating on the subclavian vessels is also available for reaching the brachial plexus.

This observation illustrates the advantages afforded by temporary disarticulation of the inner end of the collar-bone, over the method of section of the bone usually practised; while affording freer access to the whole supra- and infra-clavicular regions, it disturbs their anatomical relations very little and, for an experienced surgeon, is very easy of performance. It is advisable, in order to protect the clavicle from subsequent dislocation, to stitch it firmly in place and to immobilise the arm for at least two weeks.

DONATIONS AND BEQUESTS.—The late Dr. Henry Barnes of Carlisle, vice-president and formerly president of the British Medical Association, and president of the Cumberland Infirmary, left his medical books to the Royal Society of Medicine; £50 each to the British Medical Benevolent Fund, the Medical Auxiliary of the C.M.S., Epsom College, and the Border Counties Home for Incurables, Carlisle. In the event of the failure of trusts for his wife and children, he left, among other bequests, £1000 to Cumberland Infirmary, £2500 to Edinburgh University for a Scholarship for Clinical Medicine, and £1500 to Epsom College for a similar scholarship.

TWO CASES OF
ACUTE HÆMORRHAGIC PANCREATITIS
AND ONE CASE OF PANCREATIC ABSCESS.

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THE prognosis of acute pancreatitis in its various forms is grave and always uncertain. Of cases which appear to be clinically and pathologically identical probably the greater number die even after early operation. Others, although they finally recover, give rise to the gravest anxiety during the first few hours or days. Others again, a small minority, make a speedy and uninterrupted recovery. In a disease with such clearly defined and striking symptoms and signs it seems strange—as has often been remarked—that the diagnosis should be so seldom made before operation. It is therefore fortunate that the true nature of the case can practically always be recognised as soon as the abdomen is opened.

One of us (A. T. C.) has recently analysed 50 cases of acute pancreatitis recorded between 1910 and 1920 in eight of the most accessible British journals. At the operation fat-necrosis and ascitic fluid (usually blood-stained) are the two findings which attract immediate attention.

Fat-necrosis, either in the omentum, mesentery, or retro-peritoneal tissue, was found in 33 out of 35 cases subjected to operation. Blood-stained fluid, either in the lesser sac, the greater sac, or both, was found in 17 cases; "turbid" fluid in one, and "bile-stained" fluid in one. The condition of the pancreas itself is variously described as simple swelling, acute inflammation with or without cyst-formation, hæmorrhagic pancreatitis, abscess, or more or less extensive sloughing of the gland. Of six, definitely mentioned as cases of acute hæmorrhagic pancreatitis, three died and three recovered. In this series of 35 cases treated by operation, pancreatic fistulæ are stated to have developed only in two. One, a man of 51, in whom a cyst containing trypsin was found, had a fistula for four months, the amount of discharge of pancreatic fluid varying from 2 to 17 oz. daily. The other case, a male of 40, had a fistula for six weeks. Both fistulæ appear to have closed spontaneously.

In the case about to be described a fistula persisted for nearly six weeks and gave us the opportunity of verifying one or two facts relating to the physiology of the pancreas. For the first three weeks or more the pancreatic juice was mixed with pus and other discharge. Therefore the time available for our observations was limited to a few days only.

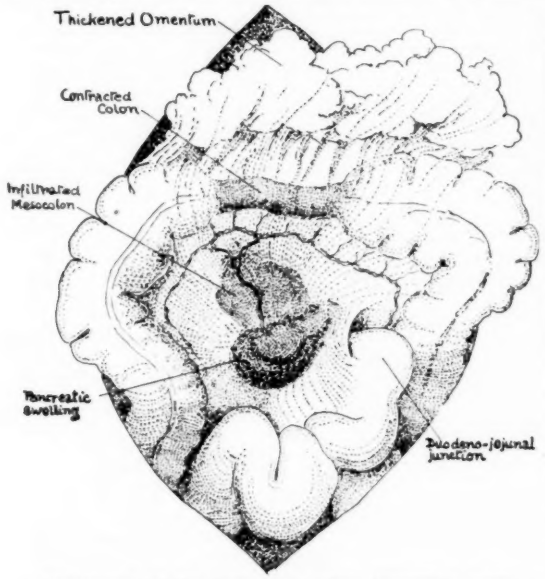
CASE 1.—Mrs. G. M., a Polish Jewess, aged 37 years, was admitted to the German Hospital on May 11th, 1920, suffering from intense epigastric pain with vomiting. There was nothing important in the family history. She had never been ill before. There were five children, the youngest being 5 years old.

History of present illness.—About the middle of April, 1920, the patient had an attack of pain in the epigastrium lasting for several hours and accompanied by vomiting of greenish fluid. As the bowels were not open she took magnesium sulphate. The pain and vomiting ceased entirely, and nothing unusual was noticed till the evening of May 10th, when she was again seized with the same violent pain. The onset was sudden, the pain described as an "intense cramp," accompanied but not relieved by vomiting of the same kind of greenish fluid. This condition persisted all through the night and the following day.

Condition on admission.—At 9 P.M. on the 11th the patient was much exhausted by incessant pain and repeated vomiting. The face was pale but not anxious. The tongue was dry, the pulse rather small and rising in frequency from 130 to 140 during the first hour after her arrival. By artificial light the colour of the skin and conjunctivæ could not be accurately made out, but on the following morning a very faint yellow tinge was visible. Examination of the

chest showed nothing unusual. The abdomen moved fairly well except in the upper part, where there was a prominence, most marked half way between xiphisternum and umbilicus and slightly to the left of the middle line. Palpation caused no pain except over the swelling, which was extremely tender to the lightest touch and conveyed an elastic sensation to the hand. The limits of the swelling could not be precisely defined, fading off gradually below and on either side, and passing above into the liver dullness. In the series of analysed cases there are three in which the liver dullness was found to be diminished. In this case the liver dullness was normal in extent. The swelling was rather tympanitic on percussion. No friction sound was heard over it. The rest of the abdomen was slightly distended and dull in the flanks.

Operation.—The abdomen was opened over the epigastric swelling. A quantity of slightly blood-stained fluid escaped, perhaps three pints. The great omentum was found to be much thickened and rolled upwards towards the stomach. Nothing unusual was found at the examination of the gall-bladder or bile-ducts. The stomach, empty and natural in size and appearance, lay in front of part of the swelling described above, the greater part of the prominence being accounted for by the massing of infiltrated great omentum along the greater curvature of the stomach. The lesser sac probably contained half a pint of fluid. The pancreas



Appearance of the transverse colon, transverse meso-colon, and pancreatic swelling after drawing the great omentum upwards.

was most easily reached from below the transverse meso-colon. In this region, just above and to the right of the duodeno-jejunal flexure, a dull-red swelling was found lying behind the parietal peritoneum and extending forwards for an inch or more between the layers of the transverse mesocolon. Opposite this infiltrated area the transverse colon was contracted and discoloured, as indicated in the illustration. The appearance of the affected segment was in striking contrast to that of the bowel above and below. For a distance of 3 inches the colon was so much contracted that its lumen must have been almost occluded. Yet the cæcum, ascending colon, and hepatic flexure were flaccid, but the small intestine contained a considerable quantity of gas. The contracted part of the transverse colon was marked off sharply at both ends. Its peritoneal covering was intact but had lost its glossy appearance. The colour was a dark mahogany, the wall thick and rigid. The pancreatic swelling was exposed and incised after the peritoneal cavity had been protected by gauze packing. A little dark-red somewhat offensive fluid escaped; also a few fragments of friable material, thought to be broken-down pancreatic tissue. The finger was now passed into the retro-peritoneal space and the pancreas examined. The head of the gland felt fairly firm, the body and tail soft and friable. The discharge from the cavity was mopped out, a large drainage-tube inserted, the gauze packing removed, and the abdomen partly closed. Nothing was done to the contracted colon, in order to avoid prolonging the operation. On May 13th the patient's hands became extremely cold and her face rather cyanosed. Her mind was quite clear, and she could answer questions. The radial pulse could no longer be easily counted. For some days her condition remained the same. She had to be catheterised morning and evening. The bowels were kept open with difficulty. The vomiting lessened, but the abdomen was still distended and tender. Contrary to expectation, improvement gradually set in. For nearly three weeks after the operation much foul brownish fluid came through the tube, causing excoriation of the surrounding skin. This was treated by the application of picric acid ointment. On May 29th the escaping fluid was still rather offensive, but we collected it in a vessel for daily examination. On June 21st the discharge suddenly and finally ceased. The patient left the hospital on the same day, weak and pale, but well as far as the abdomen was concerned. When she reported herself early in August her general condition was much better, but it was found that a hard mass the size of a tennis ball had appeared behind the centre of the scar. It was well defined, freely movable in all directions, and neither tender nor painful. There was also a diffuse swelling in the left iliac region, from which a little pus was removed with an exploring syringe. The patient was advised to come into the hospital again, but she refused. She was seen a few weeks later, and, curiously enough, both epigastric and lumbar swelling had entirely disappeared, and she looked and felt perfectly well.

The fæces were always brown, doughy, and offensive. A little fat was found in them during the first fortnight, but none after May 28th. The urine was always free from sugar.

Observations (made by F. H.) upon the Pancreatic Fluid Collected from the Fistula.

On May 30th the amount of pancreatic fluid secreted in 24 hours was 450 c.cm. This was about the usual daily quantity. On June 1st, between 11.20 A.M. and 12.20 P.M. (one hour before the mid-day meal), the amount secreted was 25 c.cm. At 12.20 a meal consisting of soup, a little meat, potato, and green vegetables was given. From 12.20 to 1.20 there was no secretion at all. From 1.20 to 2.20 only a few drops were collected. From 2.20 to 3.20 the amount secreted was 55 c.cm.

Disturbance of gastric digestion also influenced the quantity of the pancreatic secretion. On June 8th, for instance, the patient was not feeling well and was sick after a dinner consisting of meat and vegetables. The secretion between 8.30 A.M. and 5.30 P.M. on that day amounted to only 30 c.cm. As the gastric derangement passed off the secretion gradually increased again. On June 12th it was 300 c.cm. for the 24 hours. The presence of trypsin, amylopsin, and steapsin was proved by the effect of the pancreatic fluid on boiled white of egg, boiled starch, and olive oil. The fluid was never quite free from offensive odour. It contained a few pus cells and was soapy to the touch.

There are several noteworthy points in this case:—(1) The epigastric swelling was caused not so much by the pancreas as by the rolled-up and thickened omentum. (2) The remarkable condition of the transverse colon. The infiltration of the transverse meso-colon with dark red fluid did not actually reach as far as the colon; the middle colic artery ran through this infiltrated area towards the contracted segment of colon, the vessel and its accompanying nerves being doubtless influenced by the highly irritating fluid. The colon must have resumed its normal appearance and function soon after the operation. (3) The suddenness with which the pancreatic discharge ceased. (4) The absence of pancreatic secretion during gastric digestion and the re-establishment of the flow while food passed through the duodenum.

Besides this case there have been only two other cases of acute pancreatitis under the writer's care during the past seven years.

In the following there may be some doubt as to the correctness of the diagnosis.

CASE 2.—Mr. N. S., aged 59, gave a history of sudden severe pain beginning in the epigastrium and travelling through the left hypochondrium into the back. This occurred on June 25th, 1920, but he did not come under observation till July 7th, when the writer saw him in consultation with Dr. F. Parkes Weber, who has kindly consented to the publication of this note. When the patient was admitted on June 7th, there was a large globular swelling in the left lumbar region reaching from under cover of the ribs to the upper part of the left iliac fossa. The swelling was tender, dull on percussion, crossed by the left part of the transverse colon above, fixed, and reaching back into the loin. The patient gave a history of gonorrhœa in 1895, followed by the development of a stricture. He had

catheterised himself since then, using a No. 4 catheter. The urine contained a little pus and 1 per cent. sugar. Since June 25th the patient had had continuous pain in the left side, made worse by taking food. The bowels had become confined and the urine had gradually diminished in quantity. The temperature was irregular. A diagnosis of pyonephrosis or possibly a malignant growth was made.

Operation (July 19th).—Through an oblique lumbar incision, an abscess containing about a pint of slightly offensive pus was opened and drained. The kidney was not distinctly felt, but lay, covered by dense adhesions, behind the cavity. The abscess reached almost to the middle line, upwards to the diaphragm and downwards into the iliac fossa. It was retroperitoneal. A few days later it was found that the amount of urine had slightly increased, but that urine was also escaping through the wound. The pus gradually lessened, but a urinary fistula formed. On Oct. 27th the kidney was removed. At the operation, a hard, elongated body was felt running tranversely across the kidney. Unfortunately, it was impossible to make out its connexions. The kidney was shelled out of a bed of dense adhesions, and the renal pelvis was damaged during the removal of the organ. The kidney was found to be macroscopically normal. There was no more escape of urine from the wound, and the patient is now in good health. The urine is free from sugar.

The third case was one of acute hæmorrhagic pancreatitis in a man aged 54, with fat-necrosis of the omentum and blood-stained fluid in the peritoneal cavity. Free drainage of the retroperitoneal space was provided through an anterior incision, but the patient died 24 hours after operation.

ACUTE PANCREATITIS,

FOLLOWED BY THE DEVELOPMENT OF A PANCREATIC CYST; RECOVERY.

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THE following case of acute pancreatitis with pancreatic cyst in a woman, aged 27, is of sufficient interest to merit record.

History previous to admission to hospital.—The patient's health up to the birth of a healthy child (10/9/20) had been very good. Two weeks after the birth she suddenly developed severe pain in the upper abdomen and back, this being repeated at irregular intervals during the next five weeks, during which time there was loss of appetite,

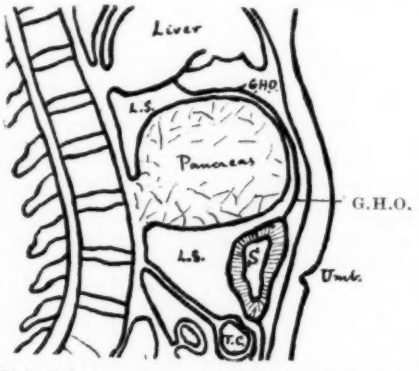


FIG. 1.—Enlarged pancreas, projecting into lesser sac (L.S.), pushing gastro-hepatic omentum (G.H.O.) forwards, stomach (S) and transverse colon (T.C.) pushed downwards.

irregularity of the bowels, and occasional elevation of temperature. On 30/10/20 a tender mass, about the size of a hen's egg, was discovered in the left hypochondrium; and two days later a marked increase in pain, accompanied by almost incessant vomiting.

Condition on admission (3/11/20).—General condition fair, with no emaciation; vomiting frequent, and great pain in upper abdomen and back. The mass, previously noticed in left hypochondrium, had increased in size and was very tender. No jaundice. Urine acid, containing a trace of albumin, but neither blood nor sugar. Specific gravity 1024.

Operation (4/11/20) (see Fig. 1).—Within 12 hours of admission the general condition became much worse. Vomiting continuous; slight cyanosis; abdomen rapidly becoming greatly distended. The tender mass now filled epigastric and both hypochondriac regions. Abdomen having been opened in middle line, pancreas was found to be enormously enlarged, stomach and transverse colon being displaced downwards. The pancreatic enlargement, which was covered by the gastro-hepatic omentum, was solid, uniform, yellowish in colour, and involved the whole gland. There was marked œdema of the peri-pancreatic tissues, and, in the vicinity of the tail, fat necrosis (confirmed by histological examination) was present. The general peritoneal cavity contained some free fluid, which was not, however, blood-stained. The gall-bladder was distended and contained bile and numerous calculi. Owing to the size of the pancreas the common and pancreatic ducts could not be defined. The gall-stones were removed and the gall-bladder drained.

Progress.—For the next four days the patient was extremely ill, vomiting and hiccough being very persistent and the pulse being often uncountable. From the fifth day there was rapid and uninterrupted improvement, and two weeks after the operation the general condition was very good. By that time, also, the pancreatic swelling had become much reduced in size. Little bile came through the drain during the first two days, but for the next ten days there was an average of 5 oz.

Relapse.—On 1/12/20—that is, four weeks after the operation—there was a recurrence of vomiting, and within the next week a painless swelling appeared which soon filled the epigastric and left hypochondriac regions.

An estimate of the fat in the stools (by Dr. J. Anderson) at this time showed a slight degree of pancreatic insufficiency. The details were, total fat 23·6 per cent., neutral fat 16·0 per cent., fatty acids 7·6 per cent.

Second operation (9/12/20) (see Fig. 2).—Further operative interference being necessary owing to the persistence of

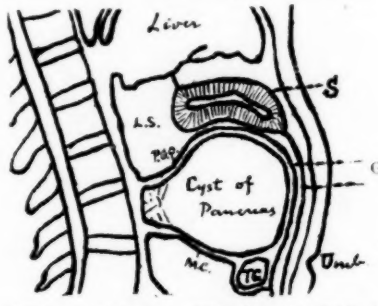


FIG. 2.—Cyst of pancreas, projecting forwards between posterior layer of great omentum (P.G.O.) and transverse mesocolon (M.C.), pushing forwards gastro-colic omentum (G.C.O.), and displacing stomach (S) up and transverse colon (T.C.) down.

the vomiting, the abdomen was again opened. The swelling was found to be a large cyst of the tail of the pancreas, about the size of a child's head. The cyst had pushed the stomach upwards and the transverse colon downwards. It was exposed through the gastro-colic omentum, incised and emptied. It contained a large quantity of slightly turbid, straw-coloured fluid, and a considerable quantity of yellow putty-like material of a tenacious character was adhering to the lining in several places. This was considered to be either secretion which had undergone chemical changes, or necrotic pancreatic tissue. The cyst was unilocular, and the lining was smooth and shiny. The edges of the opening having been stitched to the parietal peritoneum, the cavity was packed with gauze. The fluid was reported by Dr. Anderson to be alkaline, with a slight deposit of red blood corpuscles; on testing its digestive powers no amylase could be demonstrated, but a faint tryptic reaction was obtained.

Progress.—There was immediate improvement after the operation, the vomiting ceasing and the general condition rapidly becoming very satisfactory. The gauze packing was removed on the fifth day, and the cavity repacked daily thereafter. Two months after the second operation the cavity had become completely obliterated, and the patient has since then been perfectly well.

Remarks.

1. There was evidently at first a subacute inflammation in the tail of the pancreas; later there occurred a sudden spread, and within 12 hours of admission there was a typical acute pancreatitis involving the whole organ.

2. The relief of the symptoms which followed the removal of the biliary calculi and drainage of the gall-bladder is difficult to explain in the absence of jaundice.

3. The vomiting which recurred on the development of the cyst was clearly due to pressure on, and displacement of, the stomach and duodenum and the consequent interference with their mechanical function. It was remarkable that, notwithstanding the size of the swelling, all other symptoms were absent, there was no pain, no jaundice, no glycosuria, no steatorrhœa, merely a slight degree of pancreatic insufficiency.

4. The chief point of interest was the formation of a large cyst within one month of the onset of the acute pancreatitis. This was not due, as is usually the case, to a chronic indurative pancreatitis, but was caused by the blocking of ducts, either by secretion which had become tenacious, or by necrotic pancreatic tissue. It is significant that it occurred in the tail, the part of the gland which was earliest and most acutely affected. The remainder of the gland recovered.

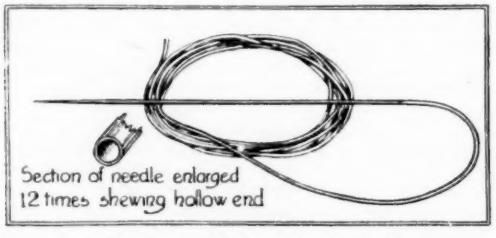
5. A further point of interest is the change in the relative position of the stomach, transverse colon, and pancreas. At the first operation it was noted that the enlarged pancreas had pushed the stomach and colon downwards, and was showing above the former, being covered by the gastro-hepatic omentum (Fig. 1). At the second operation the position of these organs was found to have changed. The pancreatic cyst, by displacing the stomach upwards and the colon downwards, presented itself between them, being covered by the gastro-colic omentum (Fig. 2).

I wish to express my thanks to Mr. J. Grant Andrew for permission to publish this case, and to Dr. Anderson for the pathological reports.

New Inventions.

AN IMPROVED SURGICAL NEEDLE.

IT must have occurred to every surgeon that it would be a great advantage, especially for intestinal work, if the doubling of the suture necessitated by the ordinary needle eye could be avoided. After a series of experiments we have succeeded in producing a needle with a tubular end into which the suture can be firmly fixed. In the case of catgut, owing to the swelling which occurs on immersion in water, the result is a needle and suture of the same diameter throughout, any catch in drawing them through the



tissues is entirely avoided, and the performance of delicate intestinal suturing is greatly facilitated. The needle is being manufactured for us by Messrs. Charles Spencer, of Redditch, who will shortly be able to supply it in every form, straight or curved, round or cutting, and in every size. Threaded with "London Hospital" catgut, packed sterile in tubes and ready for immediate use, they can be obtained from Messrs. Allen and Hanburys, the sole distributing agents for the hospital.

H. S. SOUTTAR, F.R.C.S.,
Director of the Surgical Unit, London Hospital.

Reviews and Notices of Books.

SQUINT.

Its Causes, Pathology, and Treatment. Fifth Edition. By CLAUD WORTH, F.R.C.S. London: Baillière, Tindall and Cox. With 42 figures in the text. 1921. Pp. 242. 12*s*. 6*d*.

THIS book is substantially the same as when it was first published in 1903. Its great value lies in the lucidity with which is explained the ordinary concomitant squint of children, a subject which formerly was commonly misunderstood. Early attempts to account for the condition by supposed anomalies in the eye muscles themselves were seen to be unsatisfactory, but the theory of Donders held the field for many years. This theory is based on the fact that the accommodation of the eyes for near objects is generally associated with convergence of the visual axes. In cases where hypermetropia exists the extra accommodation rendered necessary is apt, according to this theory, to involve such an extra amount of convergence that an internal squint may occur. That Donders' theory, however valuable as a partial explanation of the phenomenon of squint, was not by itself sufficient had long been felt by ophthalmologists, but no one had put the matter so clearly until the publication of this book. Since a great many children who suffer from convergent squint have no more than the average amount of hypermetropia, the latter, while doubtless a contributing cause in many cases, cannot be the essential cause of the condition. The real cause, Mr. Worth maintains, is to be found in defect of the faculty of fusing the two slightly varying images formed on the two retinæ, a faculty normally developed during the first few months of life. In its absence various conditions, one of which is the presence of hypermetropia, may determine the onset of squint. When this occurs it only rarely happens that any diplopia is noticed, the reason being that the image formed in the squinting eye is suppressed. From suppression of the image amblyopia in the squinting eye arises, a condition that easily becomes permanent unless combated by timely treatment. Nowhere, we believe, is all this so clearly set forth as in this book.

The non-operative treatment is very satisfactorily dealt with. In the case of young children the most urgent necessity is to combat the onset of amblyopia by occlusion of the fixing eye. In comparison with this first essential the education of the fusion faculty and of binocular vision is of secondary importance. Of the many devices which have been invented for the latter purpose Worth's amblyoscope is probably the best, provided that it is practicable for the surgeon to devote the necessary time to the education of the patient. With regard to the operative treatment of squint the varieties in the method of advancement practised by different operators are manifold, and the particular method described in this book will be considered unnecessarily complicated by some who are in the habit of obtaining excellent results from simpler ones. As to the question of tenotomy versus advancement there is also a variety of opinions, but we believe that the best of these supports Mr. Worth's conclusion in favour of advancement as the most satisfactory and the safest procedure. He goes so far as to reject tenotomy altogether on the ground that one never can tell just how great the ultimate effect will be.

MICROBIOLOGY.

Third Edition. By 25 Contributors. Edited by C. E. MARSHALL, Professor of Microbiology in the Massachusetts Agricultural College. London: J. and A. Churchill. 1921. Pp. 1043. 21*s*.

THERE is at present in this country no organisation for the study of bacteriology as such. At least nine-tenths of the energy and time that is put into its prosecution is devoted to those organisms which are known or suspected to be of pathogenic importance to

man or are of hygienic interest; a little work is done on the diseases of domestic animals, the micro-organisms of milk and its products, plant diseases, and in a few other industrial directions. No one studies, and probably no one is competent to teach, how bacteria in general live and move and have their being. Our bacteriology is technological, and for the greater part medical—an unsatisfactory situation which has followed easily enough from its historical development. As would surely ensue in the case of any branch of knowledge where practical applications outstrip any firm fundamental basis, progress is now hampered by absence of general principles; serology is at a blind end and we have no sound system of distinguishing one species from another owing to neglect of the botanical and zoological aspects of the subject.

It has long been recognised that human anatomy is intelligible only on a foundation of comparative anatomy, the composition of urine only on some knowledge of chemistry in general. The appreciation that pathology and bacteriology cannot get much further on their present sandy and restricted bases is bound to come sooner or later; a careful study of the admirable summary edited by Prof. Marshall will help as a first step to convert those who may still think that human pathological bacteriology is the beginning as well as the end of the subject. Of 992 effective pages, 144 go to morphology, 152 to general physiology; air, water, sewage, and soil have 124, milk and its products 87, the bacteria and protozoa concerned with the diseases of man and domestic animals 245, while the rest is occupied with plant diseases, industrial processes, and so on. The treatment of each subject is, as it must be in a single volume, short and summary, but it is enough to shake the faith that our previous manuals contain all that we need know about bacteria. We are not aware of any other book which gives such an illuminating survey of the manifold activities of micro-organisms. Without any hesitation it can be said that every serious student and every laboratory ought to have a copy—which is the easier because, as things go nowadays, it is a very good guinea's worth of quantity. Many readers will probably complain that it does not say enough about the particular topic which interests them, but in a book of this size that cannot be helped; the same objection has, after all, been made to the Encyclopædia Britannica.

The book is handy in form, compact, and closely but clearly printed (in America), and the present edition has been expanded and rearranged in many places.

INSANITY AND MENTAL DEFICIENCY IN RELATION TO LEGAL RESPONSIBILITY.

A Study in Psychological Jurisprudence. By WILLIAM G. H. COOK, LL.D. Lond., of the Middle Temple, Barrister-at-Law. London: George Routledge and Sons, Ltd.; New York: E. P. Dutton and Co. 1921. Pp. 216. 10*s.* 6*d.*

"Dr. Cook has the good fortune to treat of a subject rarely dealt with as a whole." So wrote Sir John Macdonell, a learned lawyer, who has since died, in a foreword contributed to Dr. Cook's thesis for the doctorate of laws in the University of London, now published in book form. Sir John Macdonell's observation was apt, for we know of no similar work of so exhaustive a character, and Dr. Cook is to be congratulated upon his choice of an important but obscure subject in medical jurisprudence. It is in no way to his discredit as a lawyer if, having been able to assemble a large number of cases for discussion of the principles and rulings involved, with occasional references to the laws of foreign countries, he leaves us certain of little except of the uncertainty of the law with regard to the civil rights and liabilities of the mentally affected. Presumably the law would have been richer in decisions if insane persons, when financially worth proceeding against in respect of their contracts or their torts, were not, as a rule, too well looked after to enter into the former or to commit the latter. However, in the cases that he cites, Dr. Cook finds plenty of material for criticism and for suggestion.

Medical science has made progress in its understanding of the problems presented by the varying phases of mental unsoundness, and is apt to find the law unprogressive and unsympathetic in dealing therewith. Dr. Cook's point of view in criticism is that of the medical expert rather than of the lawyer, where the two are not in accord, and the fact that he criticises and suggests as well as records precedents gives a readable quality to his work which the legal treatise often lacks. The occasions which raise questions of mental capacity in civil courts are not, of course, confined to actions arising out of torts or out of ordinary commercial contracts. They may arise also out of the desire to obtain a decree of nullity of marriage, or in reply to a petition for divorce, and perhaps they are discussed most frequently in connexion with the alleged incapacity of a testator.

Those who are interested in any aspects of these complicated questions will find much to interest them in the perusal of Dr. Cook's monograph.

ANDREAS VESALIUS.

Six Anatomical Plates of the Year 1538. Edited and presented by MORIZ HOLL (Graz) and KARL SUDHOFF (Leipzig) to the eighty-sixth meeting of German Philosophers and Physicians at the Festival of the 400th Anniversary of the Birth of Vesalius. Leipzig: Johann Ambrosius Barth. 1921. Pp. 12 and plates. M.60.

THIS reproduction of six anatomical plates designed nearly 400 years ago by Andreas Vesalius serves to show how advanced Vesalius was as an anatomist, although the great secret of the circulation was hidden from him. The first plate illustrates the portal vein; the second the distribution of the venæ cavæ; the third the great arterial system consisting, according to Vesalius, of 147 vessels which convey the "vital spirit" from the left side of the heart to the whole body; the fourth plate is a graphic representation of the skeleton from the front; the fifth is the skeleton seen sideways; and the sixth from behind.

These old drawings have all the force and grace of those dances of death which were popular decoration in the Middle Ages. Skeletons as depicted in a nineteenth or twentieth century text-book are accurate collections of dry bones held together by wire; the skeletons of Vesalius have expression, and as they beckon, admonish, and encourage with gesture they remind us of the wall paintings in churchyards for which the word *macabre* has been coined.

THE CARE OF EYE CASES.

A Manual for the Nurse, Practitioner, and Student. By ROBERT HENRY ELLIOT, M.D., B.S. Lond., Sc.D. Edin., F.R.C.S. Eng., Lieut.-Colonel I.M.S. (Ret.), Lecturer in Ophthalmology, London School of Tropical Medicine. London: Henry Frowde and Hodder and Stoughton. 1921. Pp. 172. 12*s.* 6*d.*

A MEDICAL author can essay no more difficult task than that of writing a book for nurses. The middle course between inadequate simplicity on the one hand and overabundant and perplexing detail on the other is difficult to achieve and still more difficult to maintain. The intelligent nurse learns the actual practice of nursing ophthalmic cases in the wards under a sister's tuition, but she soon realises that there is a definite limit to the information available from this source. Questions regarding the uses of instruments, the theory underlying procedure, methods of examination, and the mysteries of disease, gain no satisfactory answers, and Colonel Elliot's desire to supply a source of reliable information is a praiseworthy one. Frankly, however, we do not think he has succeeded. He has covered a great deal of ground, and one or two of his chapters are excellent. The majority, however, especially those of Part II. on diseases, err on the side of simplicity and convey hardly more detail than the average

popular medical dictionary. Part I. is mostly concerned with nursing proper, but contains a chapter on the anatomy of the eye, and one on special methods of ophthalmic diagnosis, wherein various instruments, such as the binocular loupe, the transilluminator, the perimeter, Bjerrum's screen, tonometer, and others are briefly described. Illustrations from trade catalogues are given of almost all. The chapters on nursing are the best, but they hardly bear comparison with Mr. Sydney Stephenson's manual on the same subject, though perhaps more up to date. A whole chapter is devoted to subconjunctival injections. In an appendix a list of instruments for various operations is given, also illustrations of most instruments in ordinary use.

Colonel Elliot has, we think, attempted to combine in one a book of reference and a manual of nursing. The result is not satisfactory. Both are needed, but they should be kept separate and distinct. His book, however, contains many good things, and in the absence of a better should without question be recommended to the ophthalmic nurse.

BOTANY.

An Introduction to the Structure and Reproduction of Plants. By F. E. FRITCH, D.Sc., Ph.D., F.L.S., and E. J. SALISBURY, D.Sc., F.L.S. London: G. Bell and Sons, Ltd. 1920. Pp. viii. + 458. 15*s.*

THIS book is intended as a sequel to the "Introduction to the Study of Plants" by the same authors. The two volumes form together a very complete introductory course in botany; and the later one will also prove valuable by itself, since it treats of anatomy rather more fully, and more from the physiological standpoint, than has been usual in handbooks of an intermediate standard. In the first part of the book the structure of the plant cell, its methods of division, and its contents are described; then follow chapters on the structure of the various plant organs and anatomy related to habitat. The second part gives a general survey of the great groups of the vegetable kingdom and closes with a useful chapter on heredity and evolution. The illustrations are numerous and are arranged in 230 figures, about two-thirds of which are original. These are well drawn, and though finished in a slightly diagrammatic style that makes them particularly useful to students, they are not untrue to nature. In order to give the reader a better general description of each group of plants as a whole, the study of isolated types is abandoned. Numerous examples are introduced and thus the range of form and reproductive methods characteristic of each group are well illustrated. The book will prove of great value to the general botanical student and can be warmly recommended to those preparing for the Intermediate Science and First Medical Examinations.

JOURNALS.

Journal of Anatomy. Vol. LV., Parts 2 and 3. January and April, 1921. Cambridge University Press. Pp. 79–217, with 10 plates. 20*s.*—Dr. E. A. Linell opens this number with an account of variabilities in distribution of nerves in the upper limb. This record of painstaking observation, of great clinical interest, is not of a nature to admit of abstraction, but will form a source of information for anatomical textbooks and for surgeons.—Miss I. C. Mann, writing on the development of the fissural region in the eyes of chicks and some mammals, calls attention, among other things, to the eversion of the non-pigmented layer of the optic cup along the lips of the fissure. This is a definite sauropsidan feature, and leads to the appearance of the "cauda" on the surface of the eye in this class, but it is also definitely seen in mammals at early stages. She also describes the pecten as ectodermal in origin, not mesodermal as usually described.—Mr. W. B. Primrose deals with the evolution of the vertebrate endoskeleton, bringing it through hydroskeletal, hydrostatic, sclerotomic, and neural stages to the final neuro-muscular skeleton of the vertebrate. The views he promulgates are of interest in relation to certain ontogenetic details such as the nature of the changes occurring in formation of the notochord from cells. The paper is one of great interest; the relation between segmentation and excretion, however, calls for consideration.—Prof. L. Bolk, of Amsterdam, contributes two important "odontological essays." The first deals with the development of the palate and alveolar ridge in man, in which he shows that the alveolar ridge is a new formation, not made from the outer border of the secondary palate. This has, of course, been known to English anatomists for a considerable time, those who had worked in this region being well aware that the so-called "alveolar ridge" of the earlier stages is taken into the palate, with secondary formation of a true alveolar ridge, but it is well that the matter should be definitely pushed home in detail. Prof. Bolk incidentally points out with justice that there is no heaping up of epithelium along the jaw such as German writers distinguish as the "Zahnwall." The second essay, on the development of the enamel-germ, is much longer, and is filled with observational details of these organs in many varieties of animals, including man. The general presence of what he terms an "enamel-niche" and "enamel-canal" makes a new feature brought forward by the writer of the essay and not described previously. It has been customary to describe an area of stellate change in the cells of the organ, but Prof. Bolk shows that there are double areas in mammalian teeth, lingual and labial; as there are single areas in reptilian organs, the phylogenetic interest becomes apparent. Morphologists will look forward with interest to the appearance of the further essays of this series.—Prof. E. Fawcett adds to his work on the chondrocranium with a careful and detailed account of the primordial cranium in 12 mm. and 17 mm. embryos of *Tatusia novemcincta*, the paper being furnished with several beautiful plates. Among many interesting features, it may be pointed out that these embryos show clearly that the interorbito-nasal cartilage (septum) is probably not to be looked on as a trabecular prolongation; the appearance of the maxilla is very suggestive of a double centre of ossification; the posterior paraseptal cartilages develop independently of the hinder part of the floor of the nasal capsule. This is a most important contribution to our knowledge of mammalian crania.

Japan Medical World. Vol. I., No. 1. May 15th.—Although many adjustments may yet be required before East and West can meet in full communion of spirit, medicine, which is international in its outlook and bearings, has already gone far to this end. Japan has rapidly risen from oriental mediævalism and while some 50 years ago she was simply receptive of Western culture she is now adding her share to the common stock of knowledge which makes for progress, particularly so with regard to medicine. This is exemplified by a new monthly journal published in English, entitled the *Japan Medical World*, which deals with medicine, surgery, and collateral sciences. The editor is Dr. K. Miyajima and the journal is published by the Nippon-No-Ikai Sha, at Kanda. The first number includes original articles, a review of Japanese medical literature, a report of the proceedings of medical societies, and medical news. The original articles are: A New View of the Intermediate Metabolism (Y. Kotake, Osaka); On the Diuretic Principle of the *Myrica Alba* (K. Abe and H. Takahara, Tokyo); Experiments on the Filtration of Water Containing Encapsulated Larvæ of *Clonorchis Sinensis* (M. Muto, Nagoya); On the Influence of the Amino Acids for the Growth of Gonococcus and other Cocci (R. Kobayashi and E. Nishikawa, Tokyo); On the Structure of the Cell Nucleus (O. Tamura, Okayama); and On the Development of the *Paragonimus Westermanni* and its Prevention (S. Kobayashi, Korea). The journal consists of 48 pages, and is published at a yearly subscription of 12 yen, post free, or $6 for foreign subscribers.

CONTROL OF MEASLES IN LONDON.

THE resolutions of the conference of London borough councils which was convened in February last have recently been under consideration by the Public Health Committee of the Council, and the recommendations which the committee is now prepared to make were this week presented to the Council for ratification. The conference of borough councils was invited to consider (1) proposals for further legislation, and (2) proposals for making more effective the existing powers of the Council and the local sanitary authorities. No proposals were made for further legislation, but on the second point of reference the conference adopted the following resolution:—

"That for the better control of measles in the county of London there should be the fullest measure of coördination between the central and local authorities and other agencies concerned in the care of children; and it is desirable that: (i) Every effort should be made through the school organisation to obtain the earliest possible information with regard to the reasons for absence from school of children, especially those attending infants' departments, and that the fact of the existence of measles in the homes of the children should be communicated at once to the local medical officer of health. (ii) Steps should be taken, if possible, to ensure that parents and guardians of children liable to attend school should notify the head teacher of the school within 48 hours when a child is kept away from school on account of ill-health, stating the apparent nature of the illness or indisposition from which the child is suffering. (iii) Every possible effort should be made to develop the provision of nursing assistance in the case of measles, and that the authorities of all hospitals and dispensaries and private practitioners should be made aware of the facilities that exist for obtaining nursing assistance in the case of measles, and that forms should be supplied to them upon which application could be made for nursing treatment in suitable cases."

In order to meet the proposal contained in paragraph (1) of the resolution the Public Health Committee of the London County Council is prepared to take steps to issue to school teachers and attendance officers a general instruction to acquaint the borough medical officer at once of all detected cases of measles, particularly where young children under school age are affected and where home conditions are unsatisfactory. When there are indications, during times of normal prevalence of measles, that the disease is increasing in any particular school or group of schools the committee is also prepared to put into operation the scheme applied successfully in 1913. This scheme involved special arrangements under which head mistresses of schools in affected areas informed the divisional superintendent of all absentees every Tuesday morning, and cases of measles were at once reported to the borough medical officer. It is also proposed that when measles tends to become epidemic, when the number of reported cases from London schools approaches 1000 weekly, to apply the scheme experimentally put into force in 1920, entailing close coöperation between school nurses, the attendance officers, and the staffs of the local sanitary authorities.

Regarding notification by parents and guardians of absence due to illness of any sort, the Public Health Committee has been advised that it is not within the power of the Council to make a by-law requiring parents to make such notifications. The Education Committee however, is considering whether anything further can be done to secure the fuller coöperation of parents and guardians.

The recommendation of the conference that every possible effort should be made to develop the provision of nursing assistance is a matter in which the London County Council has no responsibility. This work in London devolves entirely on the City Corporation and the borough councils. It appears, however, that the work of the borough councils is impeded, owing to imperfect appreciation of existing nursing facilities, not only by parents but by those engaged in medical work. The Public Health Committee therefore proposes, subject to approval by the borough councils, to circularise hospitals, dispensary authorities, and private practitioners throughout London, directing their attention to available nursing facilities.

Compulsory Notification.

With reference to a second resolution passed by the conference: "That this conference is of opinion that the notification of measles by the medical profession is necessary for the following purposes—viz.: (*a*) To secure the prompt segregation of susceptible contacts attending the public elementary schools; and (*b*) to render efficient any provision of nursing aid by the local authority," the Public Health Committee of the Council believes that more complete information with regard to new cases of measles is obtained through the school organisation than through compulsory notification. In a large proportion of cases a medical man is not called in at any stage of the disease. The committee agrees with the county medical officer that the detection and reporting by the school organisation of cases of measles gives a more complete result than would be attainable by compulsory notification, and that the public money that would be needed for compulsory notification could be more usefully spent on additional nurses, health visitors, or after-care of patients.

In response to an invitation from the Ministry of Health to express the views of the London County Council on a proposal by certain borough councils that measles should again be made notifiable, the following resolution was submitted by the Public Health Committee for consideration by the council:—

(*a*) That if so desired by the metropolitan borough councils the Council is prepared to send to the authorities of all hospitals and general medical dispensaries and to all private medical practitioners in London a communication, in a form satisfactory to the borough councils, directing attention to the facilities available through the public health services for the nursing of cases of measles in London.

(*b*) That the Council considers that until more experience has been gained of improved arrangements for the detection and notification of measles through the school organisation, it would not be desirable to adopt the proposal to make measles compulsorily notifiable by medical practitioners throughout London; and that a representation to this effect be made to the Minister of Health.

After two members of the Council had spoken on the resolution, the debate was adjourned till the next meeting of the Council.

INTERNATIONAL CONFERENCE ON TUBERCULOSIS.

THIS Conference will be held at the Institute of Civil Engineers, Westminster, from July 26th to 28th, and over 100 delegates from other countries have already announced their intention of being present. Mr. Léon Bourgeois, President of the French Senate, will be in the chair, and among those who have accepted invitations are Sir George Newman, Sir Robert Philip (President-Elect), Sir Humphry Rolleston, Hon. Sir Arthur Stanley, Sir StClair Thomson, Prof. Sir German Sims Woodhead, Mr. Woolcombe, and Sir William Younger, Great Britain; Prof. Calmette, Assistant Director of the Pasteur Institute, Dr. Armand Delille, Grancher Institute, and Prof. Léon Bernard, Hon. Secretary International Union, France; Colonel Bushnell, head of Medical Department of the U.S.A. Army; Dr. Hatfield, Managing Director of the National Association of the U.S.A.; Dr. Linsley Williams, Dr. H. Landis, Miss Mary Gardner, Dr. Gerald Webb, and Dr. Charles Minor, United States; Prof. Ascoli and Prof. Pio Foa, Italy; Prof. Harbitz, one of the leading authorities in Europe, Norway; H. E. the Chamberlain to the King, Sweden; Prof. Nolen, Holland; Dr. Dewez, President of the Belgian National League against Tuberculosis, and Dr. Gaston Grégoire, Governor of Liége, Belgium; Dr. Siah, China; and Prof. Winslow, League of Red Cross Societies. Delegates are also coming from Australia, Canada, South Africa, India, New Zealand, Denmark, Czecho-Slovakia, Greece, Argentina, Brazil, Spain, Roumania, the Republic of Colombia, Guatemala, Luxemburg, Haiti, Monaco, and Panama. Lord Curzon and Sir Alfred Mond, Minister of Health, will welcome the Conference on behalf of the Government.

FRENCH SUPPLEMENT TO THE LANCET

Under the Editorial Direction of

Professor CHARLES ACHARD, PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF PARIS. AND Dr. CHARLES FLANDIN, D.S.O., CHEF DE CLINIQUE À LA FACULTÉ DE PARIS.

THE PATHOGENESIS OF HÆMORRHAGIC PANCREATITIS.

BY

LÉON BINET, CHEF DU LABORATOIRE DE MÉDECINE EXPÉRIMENTALE À LA FACULTÉ DE MÉDECINE DE PARIS. AND PIERRE BROCQ, PROSECTEUR ET CHEF DE CLINIQUE, À LA FACULTÉ DE MÉDECINE DE PARIS.

HÆMORRHAGIC pancreatitis can be recognised by a clinical syndrome, often of a striking character, to which Dieulafoy has given the suggestive name "the pancreatic drama"; anatomically the condition is characterised by two orders of lesion. These are: (1) a pancreatic hæmatoma, which transforms all or part of the gland, normally small, pink, and soft, into a gross, red, tender mass; (2) ivory-white blotches of fat-necrosis, commonly called "taches de bougies," especially abundant on the pancreas and great epiploön, but sometimes disseminated throughout the abdominal cavity, for they can be detected on the kidney and spleen and even in the pelvis. Moreover, we find habitually in the peritoneum a bloody effusion of variable quantity.

Experimental Demonstration of Hæmorrhagic Pancreatitis.

This group of associated lesions can be reproduced experimentally on the dog. Care must be taken to anæsthetise the animal either with chloralose or with a mixture of morphine and chloroform. Atropine-morphine mixture must not be employed because of the arresting action exercised by atropine on the pancreatic secretion. On the other hand, as one of us has shown in collaboration with L. Morel[1] the animal ought to be in full tide of digestion. For this reason, about three hours before the beginning of any experiment of the sort, the animal should be given a meal rich in meat and fat. All precautions, of course, must be taken against the errors that would arise from any infection during the operation.

Simple ligature of the chief pancreatic duct is not followed by hæmorrhagic pancreatitis, that is to say that arrest of the pancreatic secretion, such as can normally occur in the ducts, cannot by itself give rise to the syndrome which we are considering. On the other hand, the pancreatic duct having been ligatured near the duodenum, the injection into it of various fluids will give rise to typical hæmorrhagic pancreatitis, subacute or acute, generalised or discreet, appearing in from 24 to 48 hours, and apparent on examination of the animal after it has been killed.

We do not intend here to pass in review all the substances capable of giving rise by injection into the pancreatic duct to hæmorrhagic pancreatitis. The occurrence of the lesions described above has been ascertained to succeed the employment of irritant solutions—formol, chloride of zinc, hydrochloric and nitric acid (V. Oxner), fatty acids (Jean Camus and Ph. Pagniez), chromic acid, and other agents. We are only taking into consideration here the body whose action can be incriminated in the pathogenesis of hæmorrhagic pancreatitis produced clinically.

1. *The Rôle of the Bile in the Experimental Reproduction of Hæmorrhagic Pancreatitis.*

In 1856 Claude Bernard, injecting into the pancreatic duct of a dog a mixture of bile and sweet oil, observed that the animal died in eighteen hours from pancreatic hæmorrhage. Opie, in 1901, injected pure bile and made the same observation. In 1906 Flexner observed that in these experiments the salts were the active principles of the bile. The experiments were often attended with no results, but one of us in collaboration with L. Morel[2] in 1913-1914 has demonstrated that to obtain hæmorrhagic pancreatitis in constant fashion by the injection of bile into the duct, it was necessary that this gland should itself be in the state of secreting—that is to say, that the animal ought to be digesting at the moment of the experiment. The meal before the operation can be replaced by an injection of secretin which has the same result. Fourteen dogs during the process of digestion had injected into the pancreatic duct 5 c.c. of their own bile, derived aseptically by puncture of the gall-bladder. The injection was followed by ligature of the duct. From these 14 experiments positive results were obtained in 12; acute cases (6); the animals dying between 20 and 48 hours, and subacute cases (6), the animals surviving. The necessary condition for obtaining constant results was found to be that the pancreas should be actively secreting, as indicated by the fact that the injection of secretin has the same effect as a pre-operation meal.

It can be urged against these experiments that the pancreatitis followed traumatism, whether by the injection of the bile in the canal of Wirsung, or by the retention of the pancreatic juice above the ligature. In reply to these objections one of us[3] has carried on with Morel a series of researches with the object of testing the pathological composition of bile and pancreatic juice outside the pancreatic excretory system. To bring about the new conditions we left open in the abdomen the cut pancreatic duct and gall-bladder. The animals died within 22 to 36 hours, with free hæmorrhagic exudation in the peritoneum, and many large patches of fat-necrosis.

2. *The Rôle of the Intestinal Secretion in the Experimental Reproduction of Hæmorrhagic Pancreatitis.*

The injection of the secretions of the duodenum into the pancreatic duct, followed by ligature of the duct, brings about intense hæmorrhagic peritonitis. This fact, demonstrated in 1906 by Polza, and verified by us, is very complex in origin. In the duodenal secretion different constitutents contribute to give rise to hæmorrhagic peritonitis—for example, the bile, the hydrochloric acid of the gastric juice, if this has not been neutralised, and finally entero-kinase.

This last alone, among the factors of the intestinal secretion, can operate in the genesis of pancreatitis as the result of its own action on the trypsinogene, which it transforms into active trypsin; we have been able to demonstrate this reaction by working with pure intestinal secretion, alkaline, and free from bile.[3]

The intestinal secretion which we employed was human, collected from a case of intestinal fistula, which was an exact pathological reproduction of the experimental fistula of Thiry. It opened into a loop of the damaged gut, 40 cm. in length, and was closed at each end so as to be shut off from the rest of the intestine. The collected secretion was pure, without food material or bile. It was clear, viscid, and alkaline, while the presence of entero-kinase was demonstrated by the method of H. Bierry and V. Henri. Into three test-tubes we poured 5 c.c. of milk deprived to a great extent of its fat. To the first tube we added 20 drops of pancreatic juice obtained after the injection of secretin from a temporary fistula in a dog. To the second tube we added the same quantity of pancreatic juice and five drops of intestinal secretion collected from our case of intestinal fistula. To the third tube we added five drops of intestinal secretion without pancreatic juice. These three tubes were placed in a bain-Marie warmed to 37° C. for 20 minutes, when only the second tube became transparent, owing to the digestion of the casein, thus demonstrating in

vitro the presence of entero-kinase in the intestinal secretion of our patient.

We then chloroformed a dog, eight kilogrammes in weight, and during the period of digestion injected into the pancreatic duct 2 c.c. of intestinal secretion collected from the patient. The animal was killed hree days later, and at the autopsy we found typical hæmorrhagic pancreatitis with fat-necrosis.

We can thus surmise, alongside of a biliary origin, the possibility of an intestinal origin of pancreatitis, in support of which conception we may quote the recent experiments of Gosset, J. Camus, and Monod,[4] who, when operating with the view of establishing permanent biliary fistulæ, noted the accidental occurrence of hæmorrhagic peritonitis. In their experiments the bile drained away, and was not able to be held responsible for the conditions which were due to the duodenal secretion.

3. *The Rôle of the Pancreatic Secretions in the Production of Pancreatitis.*

In a thesis, Paul Carnot[5] insisted at length on the possibility of reproducing the lesions of hæmorrhagic pancreatitis by injections into the gland of trypsin, of pancreatic extract, and of papaine, and experimental researches have led him to affirm that hæmorrhagic pancreatitis is the result of auto-digestion.

To these three categories of experiments may be added others which admit the conception of—

4. *A Multiplicity of Factors in the Production of the Pathological Condition.*

Calcium Salts.—Our experiments have shown[6] that the injections into the pancreatic duct of a sterilised solution of chloride of calcium will result in a pancreatitis remarkable for its intensity, and, secondly, will produce as a complication a pseudo-cystic cavity in the substance of the gland. We have made three researches along this line and three times we obtained hæmorrhagic peritonitis with fat-necrosis, while once we found on the surface of the body of the pancreas a cavity of the size of a large nut reproducing the type of a spurious cyst of the pancreas in its earliest stage of formation.

Pilocarpin.—We have repeated with identical results the experiments of Opie, making, that is, an intravenous injection of pilocarpin after ligature of the pancreatic duct, when the animal developed hæmorrhagic pancreatitis and fat-necrosis.

Traumatism.—Experimental injuries to the pancreas of a dog with the duct ligatured in the process of digestion resulted in hæmorrhagic pancreatitis, which did not occur in the fasting animal.

Leucocytes, Microbes, Toxins. — The injection of leucocytes, without microbes, into the pancreatic duct of a dog has been followed by pancreatitis and fat-necrosis. The injection of coli bacilli and of diphtheria toxin has been found by Paul Carnot to produce the same in typical form.

5. *The Interpretation of the Researches.*

From the preceding facts we may conclude, as Carnot has premised, that the condition of hæmorrhagic pancreatitis with fat-necrosis is an auto-digestion. Its pure form presented appears to us to be a process of fermentation, allied to the activation of pancreatic ferments, trypsin, and lipin. Normally in the gland and in the pancreatic duct system the ferments are inactive in the condition of pro-ferments; the trypsin in particular exists as a pro-trypsin, or trypsinogen. It can be activated in situ by the entero-kinase (duodenal reflex), by a cyto-kinase derived from pancreatic tissues injured by traumatism, by calcium salts experimentally injected; by a leuko-kinase or bacterio-kinase, in the case of an ascending infection in septicæmia.

When activated the trypsin damages the vessels and the cells and causes the hæmorrhage. On the other hand, the lipin attacks the fats and saponification results, with evolution of fatty acids, and soaps, and the appearance of fat-necrosis. It can be imagined that the pancreatic juice will act the more powerfully as its excretion becomes more difficult. As to the mode of action of the bile, this can be interpreted in several ways. The bile reinforces the pancreatic lipase (Claude Bernard, Dastre) and the fat-necrosis becomes intense; but if we attempt to incriminate the bile in its isolated state, and not the intermixture of bile and intestinal secretion—i.e., the duodenal content, how can we explain the activation of the trypsinogen? Either there is direct activation of the pro-trypsin by the bile, or the bile damages the pancreatic cells with the production of cyto-kinase, and thus indirect activation of trypsinogen.

A last question arises, What is the mechanism by which either the bile or the intestinal secretion reaches the intra-pancreatic secretory system? The possibility of a direct reflux of the bile into the canal of Wirsung is admissible while dealing with man—a calculus in the ampoule de Vater, hypertension in the biliary ducts, or spasm of the sphincter of Oddi.

Recently, in experiments full of interest, E. Archibald and Bron[1] have produced hæmorrhagic pancreatitis in the cat by a reflux of the bile of the common bile-duct into the pancreatic duct, or by simple elevation of the pressure in the biliary system, or by associating with this elevation of pressure a spasm of the sphincter of Oddi secured by cauterising the duodenal orifice of the canal of Wirsung with a solution of hydrochloric acid after duodenostomy.

In the case, as of man, where the pancreatitis manifests itself outside lesions of the biliary tracts, it may be the result of a reflux into the pancreatic system of the duodenal contents. This reflux, difficult in the main duct which is protected normally by the anatomical structure of the ampoule de Vater and the sphincter of Oddi, could perhaps be possible in the accessory canal of Santorini, which, according to the researches of Opie, discharges in a tenth of the subjects the principal duty of excretion. The orifice of such an abnormal canal is, perhaps, says Opie, incapable of preventing regurgitation of the intestinal contents when the pressure in the duodenum is increased by vomiting, by intestinal spasm, or by occlusion at the duodeno-jejunal angle, or in the third portion of the duodenum.

Siedel (1910) no doubt recognised the condition of hæmorrhagic pancreatitis as following on duodenal stasis. One of us has experimented in this direction and obtained on the dog a typical hæmorrhagic pancreatitis while operating in the following manner.[8] In the first instance, exclusion of the pylorus and posterior gastro-entero-anastomosis. A month and a half later, in the second instance, stricture of the terminal portion of the duodenum by means of a cord strongly tied on the duodenum, at two fingers-breadth above the mouth of the jejunum. The third day after the operation the animal died from typical hæmorrhagic pancreatitis. It is true that the conditions of this experiment are different from those which could occur in man. However, it seems to us permissible to think that in certain abnormal or pathological states of the anastomosis of Wirsung or of the sphincter condition of Oddi, hyper-pressure in the duodenun caused by vomiting or by exaggerated contractions in duodenal occlusion could bring about pancreatitis by reflux of duodenal contents into the pancreatic canal.

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RESEARCHES ON ADRENALIN DIABETES.

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SINCE Blum and then Zuelzer described, in 1901, the glycosuria following the subcutaneous or intravenous injection of suprarenal extract a great deal of work has been done on the effect of suprarenal extract and adrenalin on carbohydrate metabolism.

Achard and Desbouis[1] in 1913 have shown that the injection of suprarenal extract produces a general glycolytic insufficiency, that is a decrease of the power of the tissues of burning glycose. After an injection of adrenalin the injection or ingestion of glycose is not followed with an increase of the carbon dioxide discharge through the lungs.

We have extended those experiments on adrenalin diabetes, and we are submitting now three series of researches:—

1. On the influence of adrenalin on the glycolytic power of organism, indicated by means of provoked hyperglycæmia.

2. On the relations between adrenalin and pancreatic extract and concerning their effects on glycolytic power.

3. On the effect of adrenalin on the depancreatised animal.[2]

1. *Effect of Adrenalin on the Glycolytic Power of Organism.*

For that purpose we have studied in the dog the characters of the hyperglycæmia provoked by an injection of glycose, and, those characters being known, the variations of this hyperglycæmia when a certain quantity of adrenalin is injected together with sugar. In every experiment glycose was injected in water-solution (35 g. per litre), and blood takings were done at first before the injection and then every ten minutes following the injection. Our dosings have been made according to Epstein's method, which allows numerous takings of blood without decreasing the volume of blood in a great proportion, and therefore without altering the total quantity of blood sugar. The duration of the hyperglycæmia provoked by the injection of glycose seemed to us a most important point, susceptible of showing the aptitude of organism for fixing this sugar. In a well constitutioned dog we obtained the following results:—

First dog, weighing 12 kg., was injected with 12 g. of glycose; after two minutes the quantity of blood sugar had gone from 1 g. per litre up to 3·10 g.; the glycæmia had come down to the starting-point after 40 minutes.

Second dog, weighing 19 kg. was injected with 12 g. of glycose; after two minutes the blood sugar had gone from 0·90 g. up to 2·65 g., and gone down to 0·90 g. after 30 minutes.

Third dog, weighing 19 kg., was injected with 10 g. of glycose; the blood sugar had gone from 1·05 g. up to 2·85 g. after two minutes, and came back to the starting-point after 20 minutes.

Fourth dog, weighing 15 kg., was injected with 3·50 g. of glycose; the blood sugar had gone after two minutes from 0·95 g. up to 1·40 g., and was normal after 20 minutes.

Fifth dog, weighing 33 kg. was injected with 7 g. of glycose; after two minutes the blood sugar had increased from 1·15 g. to 1·95 g., and back to 1·15 g. after 10 minutes.

From those experiments, chosen among several others, we can conclude that the quantity and duration of hyperglycæmia provoked by the injection of glycose are evidently in proportion with the quantity of the glycose injected. The duration of that phenomenon gives very clear indications, and we can admit that with 0·50 g. of glycose per kg. the hyperglycæmia lasts about 20 minutes, and with 1 g. per kg. it lasts about 40 minutes. We might wonder what becomes of the injected glycose; one part is eliminated through the kidneys, as it is shown by a glycosuria following the hyperglycæmia; the rest is either fixed in or burnt. In fact, the analysis of gases in venous blood or in expired air shows the quick combustion of the assimilable sugar.

The comparative study of the quantity of sugar after the injection of assimilable glycose and, on the other hand, after the injection of unassimilable lactose clearly proves the part of the destruction and fixation of the sugar during the phenomenon.

A dog weighing 22 kg. was injected with 15 g. of glycose; hyperglycæmia disappeared 45 minutes after. Some days later it was injected with 15 g. of lactose; the quantity of sugar was double 45 minutes after; 0·78 g. at the beginning, 1·95 g. after 45 minutes.

What becomes of hyperglycæmia when adrenalin is injected together with glycose? We have studied that, considering in each experiment the effect of glycose alone, then the effect of adrenalin, and lastly the effect of both together.

A dog weighing 15 kg. was injected at first with 3·50 g. of glycose, two days later with 1 mg. adrenalin, and lastly, two days later with 3·50 g. of glycose + 1 mg. adrenalin:—

TABLE I.

—	Rate of blood sugar after an injection of		
	3·50 g. glycose.	1 mg. adrenalin.	3·50 g. glycose + 1 mg. adrenalin.
Before	0·95 g.	0·95 g.	0·95 g.
After—			
2 min. ..	1·40 ,,	—	1·70 ,,
10 min. ..	1·10 ,,	1·40 ,,	2·10 ,,
20 min. ..	1·0 ,,	1·20 ,,	1·70 ,,
40 min. ..	—	0·92 ,,	1·30 ,,
1h. 20 min.	—	—	1·10 ,,
2 hrs. ..	—	—	0·95 ,,

From this experiment (Table I.) it results that the addition of adrenalin to glycose brings an increase of sugar greater than the sum of the both increases brought by adrenalin alone and glycose alone. Besides this hyperglycæmia lasts longer, since it lasted after 1 h. 20 m. It is as if the organism, under the influence of adrenalin, could no longer fix in and burn sugar; its glycolytic power seems absent. Those experiments seem to be capable of practical applications; in therapeutics it seems that there is incompatibility between glycose and adrenalin; the serum composed of both glycose and adrenalin seems not to be used.

2. *Relations between Adrenalin and Pancreatic Extract with regard to their Effect on the Glycolytic Power of Organism.*

The hyperglycæmia, provoked by the injection of glycose in the veins, is exaggerated as rate and duration, when in the same time adrenalin is injected. On the contrary, it was experienced that the hyperglycæmia decreased when fresh pancreatic extract was injected—that is, that adrenalin produces a glycolytic insufficiency, and pancreas, on the contrary, increases glycolyse. Moreover, the pancreatic extract, added to adrenalin, inhibits the effect of adrenalin, as shown in the following experiment (Table II.):—

TABLE II.

Time of examination.	Rate of blood sugar after injection of—		
	7 g. glycose.	7 g. glycose + 1 mg. adrenalin.	7 g. glycose + 1 mg. adrenalin + aqueous pancreatic extract.
Before	1·15 g.	0·95 g.	0·95 g.
After 2 min. ..	1·95 ,,	1·80 ,,	1·25 ,,
,, 10 ,, ..	1·15 ,,	1·45 ,,	0·95 ,,
,, 20 ,, ..	—	0·95 ,,	—

3. *Mechanism of Adrenalin Hyperglycæmia.*

We have tried to solve that problem by studying the effect of an injection of adrenalin after the extirpation of pancreas. It is a problem so much the more interesting as the connexions between the suprarenal

glands and the pancreas have been recently sought for (R. Pemberton and J. E. Sweet, E. Gley, Lusk, Graham and Riche, F. C. Mann and Della Drips).

First dog, weighing 10 kg., injection of 1 mg. adrenalin.

Blood Sugar.

	Before.	After pancreas was extirpated.
Before injection ..	0·65 g.	.. 3·20 g.
After 10 min.	0·80 „	.. 3·0 „
„ 20 „	0·60 „	.. 3·20 „

Second dog, weighing 10 kg., pancreas extirpated six days. Injection of 2 mg. adrenalin into the saphena vein; the blood sugar, within the following half hour, remains at 3 g. per litre:—

	Blood sugar.		Blood sugar.
Before adrenalin ..	3 g.	After 20 min. ..	3 g.
After 10 min. ..	3 „	„ 30 „ ..	3 „

Such facts are not stated if the extirpation of the pancreas is not complete, and a dog which had the pancreas removed 13 days before, but had still got a stump of gland, as it was shown by autopsy, showed an adrenalinic hyperglycæmia:—

Dog weighing 9 kg. had its pancreas extirpated, on May 21st, was injected on June 4th with 2 mg. adrenalin:—

	Blood sugar.
Before	1 g.
After 15 min.	1·30 „
„ 30 „	1·50 „

The animal was killed and a stump of pancreas, about the size of a pigeon's egg, was found close to duodenum.

These experiments prove that adrenalin hyperglycæmia is not produced after extirpation of the pancreas. Finally it is as if adrenalin injected into a dog prevented the action of the glycolytic ferment from the pancreas. Its action on glycose seems an indirect one and is suppressed by the previous suppression of that ferment in consequence of the extirpation of the pancreas.

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FRENCH SPAS.

THE French have always had the spa habit. No country in the world is richer in mineral springs, and besides such well-known spas as those of Aix-les-Bains, Evian, Contréxéville, or Vichy, there are literally hundreds of other resorts dotted about in the hills and plains of France, to which the great and little bourgeoisie repair each year, as a matter of duty and inclination, to spend a pleasant holiday and cure their bodily ills. The French can justly claim that they have curative waters for almost every disease under the sun; some, such as those of the copper springs of Saint Christau, quite useful in skin affections, are the only ones of their kind as yet discovered.

The Romans were the first to exploit the natural waters of the country; Aix-les-Bains, "queen of resorts and resort of queens," was fashionable even in their days, as it was in the times of Charlemagne and Henri Quatre. Néris-les-Bains, in the Bourbonnais, was the Aquæ Neriæ of the Romans, and the remains of their ancient baths can still be seen at Royat in the Auvergne. The greatest numbers of medicinal springs are to be found in the Pyrenees, the Vosges, and the Auvergne, all places that deserve to be better known to England. The French have been backward in advertising their health resorts; content to benefit themselves, they have left it to the Germans and Austrians to cry aloud the virtues of the spas in no way superior, and often inferior, to their own.

The Pyrenees, now made accessible, are extraordinarily rich in mineral springs of every variety, particularly those impregnated with soda and sulphur. Luchon, with its highly radio-active waters, and Cauterets, with its 22 springs containing both argon and helium, are perhaps the most famous, the latter being the classic resort of patients afflicted with chronic catarrh of the nose, throat, and respiratory organs. Salies-de-Béarn is popular amongst those suffering from debility and wasting complaints, and is much frequented by Frenchwomen of all classes, as is Saint Sauveur in the Luz valley. There is Vernet-les-Bains for arthritis, Le Boulou, called "the Vichy of the South," for stomach and liver disorders, Barèges and Eaux-Chaudes for rheumatism, Aylus for gout, and Eaux-Bonnes, called "Eaux d'Arquebusades" in the time of François Premier because of its healing properties in gunshot wounds.

Auvergne, the geological heart of France, has more than 300 springs that are turned to account, the best known being Le Mont-Dore, La Bourboule, Royat, Chatel-Guyon, and Saint-Nectaire. The radio-active waters of La Bourboule, which is pre-eminently a health resort for children, are replete for anæmia and diabetes; those of Chatel-Guyon for diseases of the digestive apparatus and the intestines; Saint-Nectaire, with its "mineral lymph," is popular for albuminuric cures, Mont-Dore for the treatment of asthma, bronchitis, and other nose and throat ailments, whilst Royat is recommended for disorders of the circulation. Vichy, whose bottled waters for stomach, liver, kidney, and other organic complaints are sold in every chemist's shop throughout the world, is also in this neighbourhood, standing on a plateau, with a cluster of smaller and less expensive spas around it. Vittel and Contréxéville, whose springs were first brought to public notice in 1760 by Dr. Bagard (physician to Stanislas, of Lorraine, ex-King of Poland) are well known to English sufferers from liver and kidney diseases, diabetes, and gout, as they are only a day's journey from London. Other spas in the mountainous Vosges district are Plombières, Luxeuil, Bains-les-Bains, Martigny, and Bussang.

Lastly, Biarritz, widely known as a seaside resort, has waters of much curative value for scrofulous and lymphatic subjects, whilst Evian on Lake Geneva is famous for its diuretic springs.

OCCIPITALISATION.

INTEREST in sacralisation of the fifth lumbar vertebra has extended to synostosis occurring at the other end of the vertebral column. The most interesting form of synostosis (or "occipitalisation" [1]) of the atlas is the unilateral variety which results in an inclination of the head towards the affected side, to which is often added a certain amount of rotation, the resulting attitude precisely resembling that in a muscular torticollis, with which, indeed, the anomaly is often associated. Normally flexion and extension of the head remain free; only the lateral movements are impeded. Great difficulty is often experienced in separating the jaws widely so that radiography by the mouth is often impossible. There is frequently but not always an accompanying kypho-scoliosis, and often also some cranio-facial muscular atrophy of the affected side. Occasionally the malformation is not perceived until as late as the twentieth year. Torticollis of bony origin is distinguished from muscular torticollis by the less-marked rotation of the head, the unretracted sterno-cleido-mastoid, the marked limitation of lateral movement and its later appearance, for it is seldom observed before the age of 3 or 4 years. Radiography provides conclusive evidence when it is possible to take a picture through the buccal orifice.

[1] Presse Méd., June 29th, p. 515.

THE LANCET.

LONDON: SATURDAY, JULY 16, 1921.

The Position of the Voluntary Hospitals.

HOSPITAL authorities have had much to think about during the last week. Lord CAVE'S Report,[1] it will be remembered, put out certain schemes under which contributions could be obtained in mass from the public without, in the opinion of the Committee, interfering with the voluntary principle of conduct. And, as a main premiss, the Committee regarded the coöperation of the National Health Insurance Commission as essential to the maintenance of that principle. The social circumstances of the country, to meet which voluntary hospitals throughout the whole of their nineteenth century developments were designed, were changing rapidly before the war, and the fluctuations of prosperity, though making a severe charge upon hospitals, were really representative alike of the national position and of enlarged scientific views. The hospitals were coming to be regarded no longer as being run by the medical profession as homes of refuge in the last resort for the sick and suffering poor. A general spirit of intelligence had revealed to the public, as well as to the medical profession, that these institutions should be used in as early a stage as possible, so that curable cases should be treated and intractable complications obviated. The tangible outcome of the spread of public intelligence was hospital abuse—often of the most flagrant sort. While the charities were thus being exploited, the expense of maintaining the patients and administering the hospitals went up, while the cost of medical education—a thing apart from the financial side of hospitals though otherwise affiliated in every direction with hospital work—was quadrupled. Thus, some ten years ago, everyone connected with the administration of voluntary hospitals—the administrator, the doctor, the patient, the teacher, and the taught—was struggling in a morass. Then came the war, when, in circumstances which have been set out over and over again in every newspaper in the kingdom, and in every hospital report that has appeared, it became clear that the voluntary system of support must either be reinforced or make way for methods of financial stability.

At this parting of the ways the road which we consider the right one—namely, the maintenance of the voluntary system—was advocated on all sides, and advocated with a unanimity that was not a little remarkable considering the reiterated assurances from pessimists that the system was already dead. Red Cross and the great Hospital Funds declared their belief that the voluntary system had not only a splendid past but a splendid future if the public could be induced to coöperate with some measure of adequacy; and Lord CAVE'S Committee crystallised this view by putting out schemes in furtherance of this happy consummation. Last week a Conference of hospital authorities was held at the Mansion House, Lord STUART OF WORTLEY, Chairman of the King's Fund Policy Committee presiding, the object being to discuss the alternatives set out by Lord CAVE'S Committee. That Committee, it may be remembered, drew attention to a number of steps which might be taken to improve the financial position of voluntary hospitals by managers and by the public. They considered, for example, that managers might review expenditure, particularly in the light of comparative costs which could be ascertained by the general adoption of a uniform system of accounts; might establish a coöperative buying of drugs, apparatus, stores, and some kinds of provisions; might remove convalescent cases to auxiliary hospitals; coördinate appeals for subscriptions; further develop new sources of income, such as subscriptions from wage-earners and employers, and other contributory schemes; and might obtain larger contributions from Approved Societies. The last of these suggestions was made the subject of an interim report by Lord CAVE'S Committee, and it is a concrete indication which is bound to come under early notice. But with regard to the various contributory schemes which have been put forward on business or philanthropic grounds, time may elapse before they come to trial.

One scheme, however, is in actual being. The Sussex Provident scheme was set out in THE LANCET, at the time of its publication some months ago, in the words employed by its originator Dr. GORDON DILL, senior physician to the Royal Sussex County Hospital.[2] Under this scheme residents in Sussex, who pay the annual subscription—£1 per annum for a single member, £1 10s. for a married couple without children or a widow or widower with one child, and £2 for married people with children—obtain a number of valuable benefits hitherto out of their reach. The scheme does not aim at providing ordinary medical attendance or at giving benefits supplied by the State or local authorities, but the medical attendants of members are able to arrange for private consultations at the following hospitals: Royal Sussex County Hospital, Royal Alexandra Hospital for Sick Children, Brighton and Hove Hospital for Women (for Obstetrics and Gynæcology), Brighton and Hove Provident Dental Hospital (for Dental Surgery), Brighton, Hove and Preston Dispensary, Sussex Eye Hospital (for Ophthalmic Cases), Sussex Throat and Ear Hospital (for Diseases of the Throat, Nose, and Ear), Lady Chichester Hospital (for borderland Mental Cases), and New Sussex Hospital for Women and Children. Any treatment found to be necessary as the result of this consultation is given at the hospital, while patients confined to bed are visited by consultants at their homes. At the Dental Hospital members receive ordinary dental treatment, and dentures are supplied at hospital rates. All the resources of the Stephen Ralli Memorial Laboratory at the Royal Sussex County Hospital are available, including bacteriological and pathological investigations, vaccines, and X ray examinations and treatment; also massage and electrical treatment. All who are insured under the National Health Insurance Acts come within the scope of the scheme, and for others the maximum income limit is £260 for single members, £400 for married people without children, or a widow or widower with one child, and £500 for a family. All subscriptions received during the year will be divided among the coöperating bodies in proportions which have been already agreed upon for the first year. The scheme, which has been working successfully for several months, immediately gained the approval of all branches of the medical profession in the county of its origin, and, as we said at

[1] THE LANCET, June 18th, pp. 1311 and 1320.

[2] THE LANCET, 1921 i., 153.

the time of its inception, was bound to attract a great deal of attention elsewhere. And now in the metropolis the London Hospital, St. Thomas's Hospital, and the Royal Free Hospital have embarked upon a similar adventure.

Acute Hæmorrhagic Pancreatitis.

DISEASED conditions of the pancreas are notoriously difficult to diagnose and, moreover, unsatisfactory to treat in many instances. It is natural to expect, or at any rate to hope, that increase in our knowledge of their pathology, and improvement in our means of diagnosis, may lead to the development of satisfactory methods of treatment. The deep situation of this gland and its important anatomical relationships combine with its complex functions to render its examination and investigation difficult. The problems are further complicated by the facts that the internal secretory functions of the pancreas are profoundly influenced by the activities of other endocrine glands, notably the suprarenals, thyroid and pituitary, and that the effects of want of balance between these various inter-related endocrine functions, though recognised and generally admitted, are imperfectly understood and not yet delimited. The problem of the diagnosis of pancreatic disease is of especial importance in the more acute lesions of that organ, more particularly in that variety known as acute hæmorrhagic pancreatitis, in which the only hopeful form of treatment at present, and in the majority of cases, is early operation.

We publish in the French Supplement to THE LANCET this week a paper by MM. LÉON BINET and PIERRE BROCQ, which is an important contribution to the pathology of this condition. They point out that the morbid anatomy, as revealed by operation or necropsy, is characteristic, comprising a hæmorrhagic change in the pancreas itself, whereby it becomes converted into an enlarged, red, "hæmatoma," while we find ivory white areas of fat-necrosis in the pancreas itself, in the omentum, and sometimes widely distributed in the abdomen and pelvis. With these characteristic and almost constant appearances there is frequently a blood-stained effusion into the peritoneum, often of considerable quantity. This distinctive morbid anatomy is familiar to pathologists and surgeons, who are often confronted with it unexpectedly. The question therefore arises as to whether the clinical manifestations afford sufficiently definite indications to allow a diagnosis to be made. Sir ARCHIBALD GARROD, in his interesting Schorstein lecture on the Diagnosis of Disease of the Pancreas[1] pointed out that there are three main groups of diagnostic indications. The first of these comprises the actual symptoms and clinical signs. One of these is pain, often sudden in onset, severe in character, and referred to the back as well as to the abdomen. Other symptoms are persistent vomiting, constipation, a moderate degree of cyanosis, rapid pulse, tenderness, and sometimes swelling or tumours in the upper abdomen. The aspect of the patient is that of severe abdominal disease, and the constitutional symptoms are often profound. Unfortunately, the concurrence of all these symptoms cannot be regarded as characteristic—indeed, they are equally suggestive of some acute abdominal catastrophe, such as intestinal obstruction, for which this condition is not infrequently mistaken. Even when sufficient enlargement of the pancreas occurs to produce a palpable and tender tumour, or to cause pressure on adjacent structures, it usually presents no characteristic features, though resonance in front of it, due to the anterior relationship of the stomach, may give a suggestive indication. The second group of symptoms comprises those due to defects in the digestive or external secretion of the pancreas, as demonstrated by examination of the fæces, the proteins, fats, and carbohydrates of the diet being all concerned. The third group includes manifestations of interference with the internal secretory or endocrine functions of the organ, particularly its relationship to sugar tolerance and glycosuria. Both the external and internal secretory functions of the pancreas are matters permitting of laboratory investigation, and in view of the dubious indications at the bedside, it is natural to turn to the laboratory for aid. The tests of pancreatic efficiency are very numerous. In regard to the external secretion alone, GARROD has referred to no less than 12. There are in addition those of the investigation of the presence of glycosuria and the degree of sugar tolerance. There is also the well-known adrenalin mydriasis reaction of LOEWI. These tests were described and critically studied in an important article by Dr. MACKENZIE WALLIS in the *Quarterly Journal of Medicine* for October, 1920. Unfortunately, as both GARROD and WALLIS insist, none of these tests individually affords consistent indications. On the other hand, when several of them give positive indications they are of great value. This is well shown in the protocols of a considerable number of cases recorded in WALLIS'S paper, and we may quote his general conclusions to the effect that the coexistence of an increased diastase content in the urine, LOEWI'S adrenalin mydriasis, and the presence of glycosuria afford strong evidence of faulty function of the pancreas, while the occurrence in addition of creatorrhœa and steatorrhœa render it certain. In view of the acute character of some pancreatic lesions, the fact that the tests just mentioned take less time for their performance than some of the others renders them of special value—for example, GARROD states that the urinary diastase and adrenalin mydriasis tests can both be carried out within an hour.

Other questions of great interest in connexion with this disease are those concerned in its pathology, prognosis, and treatment. At present we have little or no basis on which to construct a satisfactory prognosis. We may refer our readers to an interesting paper on two cases of this disease by Mr. ALWYNE T. COMPTON and Mr. FRANK HEBER, who point out the gravity and the uncertainty of prognosis (p.130). In one of their cases a successful result occurred after operation in what appeared to be an unpromising case. Another case, progressing to cyst formation and cured as the result of two operations, is recorded by Dr. R. B. CARSLAW on p.132. The only form of treatment which seems to give any hope of success at the present time is surgical—namely, opening the abdomen and dealing with the pancreatic condition found whenever this is practicable. In view of the difficulties in diagnosis, prognosis, and treatment, any researches tending to throw light upon the pathogenesis of this disease and to elucidate the mode of production of its characteristic morbid anatomy must be welcome. MM. BINET and BROCQ'S observations in the paper to which we have already referred are of great interest in this connexion. They conclude that the condition of the pancreas and of the fat in its neighbourhood are the result of auto-digestion, due to the activation of the pro-ferments produced by it. It is generally

[1] THE LANCET, 1920, i., 749.

recognised that these pro-ferments are normally activated in the intestine by entero-kinase, and it is suggested that under conditions of disease a similar activation in situ in the pancreas can be induced by a cyto-kinase derived from the pancreatic cells, by a leuko-kinase produced in the blood, by bacterio-kinases generated by bacterial activity, and possibly by the bile and duodenal contents if they regurgitate into the duct. This conception was originally brought forward by PAUL CARNOT and has been developed and submitted to experimental test by MM. BINET and BROCQ. They have investigated the rôle of the bile, of the intestinal and pancreatic secretions, of leucocytes, microbes, and toxins, and of calcium salts on the genesis of acute hæmorrhagic pancreatitis experimentally. They suggest that in some cases an escape or regurgitation of duodenal contents may occur into the pancreatic duct and thus reach the parenchyma of this organ. On this hypothesis the hæmorrhagic and destructive changes in the pancreas are due to activation of the trypsinogen or pro-trypsin—the trypsin thus formed damaging the vessels and the cells. The fat necrosis is also regarded as due to a similar activation of the precursor of the fat-splitting ferment or lipase. These researches emphasise the need for early diagnosis, since they hold out a hope that if the condition leading to the pancreatitis can be recognised sufficiently early it may be dealt with effectively. If the work is confirmed, it may explain the uncertainty of prognosis which presumably depends upon the extent of the pancreatic auto-digestion produced. The whole subject is one which would seem to be ripe for carefully coördinated team-work by physiologists, pathologists, physicians, and surgeons. The difficulties of the problems concerned invest them with a special interest and importance, and sufficient evidence is now available to indicate that they are not insoluble.

Curves of Resistance.

THE processes by which bacteria are killed by hot water or disinfectants have been analysed by several observers. The work of MADSEN and CHICK in this connexion will be familiar, and the question was dealt with at some length by HEWLETT in his Milroy Lectures.[1] The general result of these experiments on the rate of killing has been that bacteria in hot water or phenol die logarithmically—which is to say that the number which die during each time interval is a fixed proportion of those alive at the beginning of it, so that the great majority die at the beginning of the experiment. Thus if the numbers of survivors are plotted against time a curve is obtained of the type of a reversed J, while if the logarithms of the numbers are used the curve is a straight line. The charm of this result is that molecules of cane sugar and some other simple substances break up on the same plan when they are boiled with hydrochloric acid. The difficulty about it is that it is apparently in flat contradiction to the biological law that all measurable qualities of live things vary according to the normal curve or something like it. On this arrangement there should be a few bacteria of exceptionally small resistance, a few of exceptionally high resistance, with the majority graded between these extremes in such a way that most of them are at or near the average value for the whole lot. If such a population is killed off, a few will die quickly and easily, the majority will die moderately fast, and a few will take a long time to kill; plotting the survivors against time will give a curve like a reversed S. An important paper by Dr. J. HENDERSON SMITH,[2] formerly of the Lister Institute and now attached to the department of plant pathology at Rothamstead, on the killing of the spores of the mould *Botrytis* by phenol, may be welcomed as a successful attempt to bring the two views into harmony. He shows that with 0·4 per cent. phenol the curve is sigmoid, and that as the strength of disinfectant is raised it becomes less and less sigmoid, so that with 0·7 per cent. it is of the logarithmic type. Both types of curve are explicable on the assumption that the individual spores differ in resistance and that the resistances are distributed among the individuals approximately in accordance with the normal curve. It is highly satisfactory to find in this way that these lowly organisms conform to the laws which summarise the properties of other live things. The work may also go further and indicate how the properties of dead matter can be brought into line; it is impossible to say at present how large a generalisation is opened up.

[1] THE LANCET, March 13th, 20th, and 27th, 1909.

Annotations.

"Ne quid nimis."

ENERGY VALUES OF FOOD.

THE Director of Publicity of the War Office has forwarded us a copy of a volume[1] prepared by Dr. R. H. Plimmer containing tabulated analyses of all the ordinary foodstuffs. So comprehensive a series of analyses has never before been published in this country, and the figures will no doubt be accepted as standards in the United Kingdom.

Dr. Plimmer is so well known and careful a worker that his analyses will carry the weight to which they are entitled. They comprise the usual estimations of water, ash, protein, carbohydrate, and fat, and the corresponding energy values expressed per 100 grammes, per ounce. and per pound. So far as gross values are concerned it is doubtful whether the labour involved in the collection of such an enormous amount of analytical data is justified. We think the publication of this volume represents only part of the story, for no serious consideration is given to the all-important presence or absence of accessory food factors, although it is true that the appendix contains a list, taken from the Medical Research Committee's report, which expresses qualitatively the presence, either singly or collectively, of the three vitamins in the common foodstuffs.

In this matter of the energy value of foods we need to be clear-headed. It is no longer possible to regard food values from the calorific standpoint alone; the vitamin content is probably a factor of even greater importance. At present all we can do is to determine the presence or absence of accessory food factors by actual feeding trials, and until our technique is vastly improved and we have reliable quantitative methods, the natural instinct which man has for a varied diet will continue to play its part. Dr. Plimmer rightly points out that the significance of the presence of the anti-rachitic vitamin in butter, margarine, dripping, and lard should not be neglected. It is present in butter, probably in dripping, but not in lard. Margarine made from vegetable fats, which represent the bulk on the market, is deficient in the anti-rachitic vitamin, whilst the other type of margarine, which contains the olein fraction of animal fat in order to make the consistency of the product

[2] Annals of Applied Biology, vol. viii., 1921, p. 27.

[1] Analyses and Energy Values of Foods. By R. H. Plimmer, D.Sc., Captain attached to the Directorate of Hygiene, War Office. H.M. Stationery Office, 1921. 6*s*.

nearer to that of butter, is comparatively rich in this vitamin. These two margarines possess the same gross energy value, yet their true food value is very different. In spite of such considerations, not only the War Office but other Government departments are prepared to accept a classification of foodstuffs based on thermal values. It is an undesirable perpetuation of the doctrine promulgated in the well-known report issued in 1916 by a Committee of the Royal Society on the Food Supply of the United Kingdom. This report was prepared at a time of national stress, when a stocktaking of our food-supply and its evaluation on some sort of basis was a necessity. The inquiry served its purpose, and we do not for a moment think that the distinguished members of that Committee would claim more for it. It must also be borne in mind that the presence of vitamins, even coupled with thermal values, by no means represents finality in food values; the appearance, the flavour, and the many combinations of foods which are the outcome of our civilised experience all play their part in the physiology of nutrition.

TROPICAL SANITATION.

THE rapid development of tropical medicine has necessitated the devotion of a considerable amount of space in the *Tropical Diseases Bulletin* to the consideration of sanitation and hygiene in the tropics. From 1914 up to the present this demand was met by the issue from time to time, as occasion warranted, of special numbers of the *Bulletin* entitled "Applied Hygiene in the Tropics," edited by Colonel W. G. King, I.M.S. (ret.). These numbers were much appreciated by sanitarians throughout the tropics, containing as they did a large amount of useful information especially welcome to those sanitary officers whose duty lay in tropical countries during the war. The development of sanitary science in the tropics since the commencement of the war and the establishment of a special department of sanitation and hygiene in the schools of tropical medicine in this country have rendered desirable the regular publication of a summary of recent progress in that science. A new departure has therefore been made by the quarterly issue of supplements to the *Bulletin* entitled "Sanitation Supplements."[1] The first of these is under the editorship of Colonel W. W. Clemesha, I.M.S. (ret.), an authority on Indian sanitation, who is at present lecturing on that subject at the London School of Tropical Medicine. The supplement contains 82 pages, abundantly illustrated with plans, diagrams of appliances, and photographs of various sanitary undertakings. A résumé is given of recent work in the control of malaria, with special reference to the campaign in Dar-es-Salaam. Consideration is also given to yellow fever, kala-azar, yaws, tuberculosis, enteric, influenza, leprosy, typhus prevention in China, and plague. There are also sections dealing with conservancy appliances, milk in the tropics, small-pox vaccination, disinfection, vital statistics, and miscellaneous questions; reviews of books are included. The second number is concerned to a great extent with recent work on malaria prevention, with especial reference to town planning in the tropics. The picture on p. 96 of the model town of La Boca at the Pacific entrance to the Panama Canal is unusually interesting. The section devoted to the prevention of disease includes an account of the intensive treatment of yaws in Grenada, from which we learn that in 1919 3000 cases were injected with novarsenobillon, and of these 808 were cured, at an expenditure of £1739 9*s*. 6*d*. The conservancy section deals with the latest investigations upon sewage disposal; ample space is again devoted to water, milk, vaccination, and disinfection. Vital statistics receive due attention, and Colonel Clemesha deserves commendation for the attractive manner in which he presents a subject in which the majority of medical men take insufficient interest. From this short account it may be inferred that the Sanitation Supplements will well maintain the reputation of the *Tropical Diseases Bulletin*. Though primarily intended for medical men, future numbers will contain sanitary hints which can be appreciated by any person interested in sanitary progress throughout the world. These will be welcomed by officials in India and elsewhere, in so far as they may be spared the labour and tedium of wading through blue-books.

[1] Sanitation Supplements of the Tropical Diseases Bulletin. No. 1, March 30th, No. 2, June 30th, 1921. London: Tropical Diseases Bureau, 23, Endsleigh-gardens, N.W.

VICTOR VON URBANTSCHITSCH.

IT is barely a year since we recorded the death of Adam Politzer, and now we regret to note the death of Prof. von Urbantschitsch, who succeeded him as Director of the Aural Clinic in the University of Vienna. Urbantschitsch passed his life in Vienna, where he was born in 1847, in the study of otology and became, on Politzer's retirement in 1907, director of the Aural Clinic, from which he in turn retired three years ago at the age of 70. Though not so great a man nor so famous an otologist as his predecessor, he was an original worker of much ability, and did good service in improving the education of deaf-mutes and in the study of tuning-fork tests of deafness. His text-book of otology is a standard work which has run into five editions.

THE FUNCTIONS OF THE OTOLITHS.

THE complicated functional relations of the labyrinth of the ear to the muscular apparatus of the body are far from being fully revealed to us. The investigations of A. de Kleijn and R. Magnus of Utrecht[1] add considerably to our knowledge. It must be kept in mind that there are the semicircular canals on the one hand and the utricle and saccule, with their otoliths, on the other. Besides the effects on movement the labyrinth discharges tonic reflexes, dependent on the position of the head in space, such as (1) tonic labyrinth reflexes on the musculature of the body; (2) a labyrinth posture reflex; and (3) tonic labyrinth reflexes on the muscles of the eyeball. These reflexes are mediated by the otoliths, while the labyrinth reflexes on movements (turning and progressive movement) are discharged from the semicircular canals. The authors adduce evidence of the connexion between the otoliths and the tonic labyrinth reflexes, which disappear as soon as the otoliths are dislocated and, as it were, cast aside, by submitting the animal to the action of a centrifuge making 960–1000 revolutions per minute for a period of 1½–2 minutes, a method originally devised by Wittmaack. The reflexes of movement, however, remain after the removal of the otoliths. The authors deal first with the relation between the position of the otoliths in space and the maximum and minimum of the tonic reflexes. The tonic labyrinth reflexes of the extremities depend on the otoliths of the utricle, since after removal of the labyrinth canals the tonic limb reflexes remain. If the sacculus otolith was the agent the reflex would be altered on removal of the labyrinth. Each utricle seems to be in functional relation with the extensor muscles of both sides of the body. The tonic labyrinth neck muscle reflexes seem also to be in relation with the utricle reflexes, but in this case the neck muscles of one side of the body are in functional connexion with the opposite utricle otolith. The labyrinth posture reflexes are in connexion with the saccule and have their centre in the mid-brain, while the saccule otoliths are in relation to the tonic labyrinth reflexes of the eye movements. In the cases in which, after centrifuging guinea-pigs, all the labyrinth reflexes were present or returned after a time, no histological changes of any consequence were observed in the otolith apparatus. In all the uncomplicated cases in which the tonic labyrinth reflexes of the extremities, the posture, and the compensatory positions of the eyes

[1] Pflüger's Arch. f. d. gesammte Physiologie, vol. clxxxvi., 1921.

were permanent, but in which the reactions on turning, or those on progressive movement, were retained, anatomical investigation showed that the otoliths had been completely removed by the centrifuge, while the semicircular canals and the cristæ were found intact. The authors conclude that the tonic reflexes are mediated by the otoliths while the turning reactions and the reactions on progressive movements are discharged by the semicircular canals. These views are opposed to the older view of Mach and Breuer that the sensations and reflexes of progressive movements—for example, acceleration of movement—are determined by the otoliths.

ANNUAL REPORT OF THE NATIONAL PHYSICAL LABORATORY.

THE annual report of the National Physical Laboratory for 1920 indicates an ever-widening range of activity. The section of chief medical interest is that devoted to radiology (p. 49) under the direction of Dr. G. W. C. Kaye. The British radium standard of about 30 milligrammes of hydrated radium bromide has been supplemented by two other specimens which allow of accurate measurements of single quantities up to 120 milligrammes. For testing larger quantities it would be of advantage were a bigger working standard available. The two existing methods of measurement are being supplemented by a third one, elaborated by Madame Curie—namely, an ionisation method involving the use of the quartz piezo-electrique—with which the French school has long been familiar and adept. The examination of materials used in the construction of X ray apparatus is now carried out on a routine basis and will be welcomed by manufacturers who wish to have a guarantee of the effectiveness of the protective materials they use in their outfits. The Sabouraud pastille has been put through an exhaustive series of experiments to see how far it may serve as a measure of the dose of X rays received by a surface. If the X rays used are not of very short wave-length the pastille emerges from these tests with a very fair amount of credit. Different batches of pastilles, however, are apt to vary in their sensitiveness, and for this reason it is advisable that a sample from any new batch should be tested before reliance can be put upon the probable sensitiveness of the whole batch. The investigation is being extended to pastilles other than the original Sabouraud. The definition of X ray tubes is of great importance in radiographic work; the rough classification, fine, medium, or broad focus, serves at the present time, and tests of X ray tubes are carried out on these lines. It may be anticipated that the work of this section will increase in the future if the general recommendations of the X Ray and Radium Protection Committee gain general approval and adoption.

THE UNKNOWN ÆTIOLOGY OF INFLUENZAL PNEUMONIA.

ONE of the most comprehensive surveys of the problems of influenza yet published has just been issued by Gade's Pathological Institute in Bergen. The author, Dr. K. Skajaa, frankly admits nescience of the central problem, but he is able to throw many instructive sidelights on the epidemiology of the disease and the part played by secondary infection. Answers from general practitioners to an enquête sent out by Gade's Institute brought out some instructive points. In no case had any abnormal prevalence of pneumonia been observed after the influenza itself had subsided. This is one of the many points Dr. Skajaa makes in connexion with his argument that influenzal pneumonia is due to the unknown virus of influenza, and not to such microbes as streptococci and pneumococci. In several of the 184 necropsies made at the institute on persons dying of influenza the bacteriological examination of the lungs was negative. It would seem that uncomplicated influenzal infection of the lungs determines a serous and hæmorrhagic effusion which gives rise to diffuse, smooth consolidation. From this stage onwards the germs of mixed infection may play a subsidiary part, although the virus of influenza itself continues to influence the course of the disease. To emphasise the importance of the virus of influenza in determining the outbreak and course of influenzal pneumonia, Dr. Skajaa refers to three cases which occurred at the same time and in the same place, and which could be traced to the same source of infection. The condition of the lungs was identical in each case; below a horizontal, clear-cut line of demarcation there was a consolidated area which on section was seen to be smooth, shining, and almost black. The veins in every case were distended with clotted blood. So far there was nothing to distinguish one case from the other. But the bacteriological examination showed pneumococci in the first case, hæmolytic streptococci plus Pfeiffer's bacillus in the second, and streptococcus mucosus in the third. Pfeiffer's bacillus, it would seem, could not once be found at Gade's Institute during the first two waves of the recent pandemic, and in the later waves it was not found more often in the subjects of influenza than in healthy persons. Serological examinations also failed to associate any specific antibodies with Pfeiffer's bacillus, and its relation to influenza may now be regarded as even more problematic and doubtful than that of streptococci and pneumococci. With reference to immunity conferred by an attack of influenza, the conclusion is drawn that it is effective but of comparatively brief duration, being appreciably greater after a year than 18 months. As for susceptibility, underfeeding seems to play no part, and the tendency for influenzal pneumonia to break out in several members of the same household is traced to massive infection in overcrowded and insanitary quarters. Of the cosmopolitan diseases, such as plague, cholera, and small-pox, which have periodically devastated the world, influenza alone remains absolutely unbridled, rejoicing, as it does, in a sinister immunity to the restraining influences of civilisation.

THOMAS WHARTON JONES.[1]

Thomas Wharton Jones, pioneer in physiology and ophthalmology, teacher and quaint character, has been missed out of the "Dictionary of National Biography." Fairly full obituary notices appeared in *The Lancet* and *British Medical Journal*, and a compilation from these sources forms part of the "Roll" of the Fellows of the Royal College of Surgeons of England, now in accessible MS. in the College Library. Still, Sir Rickman Godlee's careful and interesting biography is welcome of one whom the scientific world has too readily forgotten.

Thomas Wharton Jones was, indeed, a giant in science, the teacher of Huxley and Lister, a man to reckon with. Born in 1808, in Scotland, he retained to the last the strong Scottish accent of his mother, though his father was of Welsh and English descent. He received his medical education at the University of Edinburgh, and became assistant to Robert Knox, the anatomist, with whom he shared in the odium visited on the Edinburgh anatomical teachers at the time of the Burke and Hare murders in 1829. After various wanderings he arrived in London in 1838, and was appointed lecturer on anatomy, physiology, and comparative anatomy at Charing Cross Hospital. He held this post till 1851, when he became first Professor of Ophthalmic Medicine and Surgery at University College. In 1881 he retired, and died at Ventnor on Nov. 28th, 1891. During the period from 1838 to 1881 he established the reputation which he had already made before coming to London. In 1835 he "was one of the

[1] "Thomas Wharton Jones, F.R.S." Reprinted from the Brit. Journ. Ophthal., March and April, 1921. 8vo. London: Putnam and Sons, Ltd. 1921.

first to discover the real germinal vesicle in the human and mammalian ovum, and to demonstrate the nature and significance of that body." Working on the subject of the blood, in 1852 he contributed to *Trans. Roy. Med.-Chir. Soc.* his paper describing the phenomena of inflammation as it occurs in the bat's wing, his previous observations having been confined to the web of the frog's foot. He also described the amœboid movements of the white blood corpuscles. These are his discoveries which rank as of supreme importance, but to appreciate the whole range of Wharton Jones's achievement the reader should consult his bibliography, containing 68 elaborate titles of books and papers, which concludes Sir Rickman Godlee's biography. His fine work in ophthalmology has been well described by his biographer in THE LANCET.[2]

Wharton Jones's personality was interesting and prickly. He is described by Huxley, his pupil at Charing Cross, as lecturing to a remote generation of students, fathers of the great scientific movements of later years. "The true *lumen siccum* of science glowed in every proposition which fell from the lips of the pale adust little man as he stood with downcast eyes, and fingering his watch chain, at one corner of the table. He never had any notes, but the lectures would have read perfectly well if printed straight off. I used to wonder at and envy his 'facility.'" He lived a recluse life, was ultra-susceptible, given to tears, "fundamentally a tender-hearted, sentimental Celt (a Cymric Celt)," says Dr. Robertson, of Ventnor, who knew him well in his closing years. Shyness, pride, and a kind of perverted love of truth which led him to argue most logically at times from passionately-held false premisses, made him probably the unhappiest of men. He loved polemics, imagined slights, and showed a touch of genius in the manner in which he could create a quarrel. His published series of letters to James Whatman, F.R.S., M.P. for Maidstone, is a model instance of what Whistler called "the gentle art of making enemies." He believed that heirlooms and much wealth, which should have come to the Joneses, had been retained by the prosperous Whatmans. The squabble centred in Wharton Jones's great-grandmother, an Elliston by descent from Alestan, a freeman of Essex, whose land had been confiscated in 1066. Wharton Jones was intensely proud of his pedigree by the distaff side, and this pride influenced his passionate character and led to his impoverishment. He gave time to antiquarian, historical, and heraldic researches, which had better have been spent in the service of his professorship. Had he been a man of means he might have happily justified his opinion that "historical and ordinary anatomico-physiological researches have much in common." As it was he lost practice, made enemies, ceased to be in touch with the world, and at last hunger knocked at his door. In 1881 he was found by Sir John Tweedy, his successor at University College, starving by a fireless grate on a freezing day. The pupil saved the master's life, got him food, collected money for him, eventually obtaining for him two pensions. It is a charming story. The old professor ended his days at Ventnor, never suspecting who were his real benefactors. He left a substantial sum of savings to a well-known man, who had been quite ignorant of the affair of 1881.

HYDROCYANIC ACID AND SANITATION.

THE May issue of the *Office International d'Hygiène Publique* contains details of recent legislation in the United States, Italy, and Sweden, concerning the use of hydrocyanic acid for fumigation of ships and buildings, together with communications on the subject made by Drs. Lutrario and Wawrinsky, Italian and Swedish delegates to the April–May session of the *Office International*. In all cases the regulations emphasise the dangers attendant upon the employment of this means of deratisation and disinfestation; elaborate precautions are demanded from the responsible port and sanitary authorities, and, these being observed, the results of the processes appear most satisfactory. The properties of hydrocyanic acid, as prepared for sanitary use, vary. In Italy the proportions used are sodium cyanide 1 g., sulphuric acid 0·8 c.cm., water 3 c.cm.; in Sweden, sodium cyanide 1 g., sulphuric acid 1·5 c.cm., water 4 c.cm. The acid is very destructive of rats and other warm-blooded animals; cockroaches, flies, mosquitoes, with fleas, bugs, and other parasites, are all exterminated in a period varying with the concentration of gas used. At Rome an exhaustive inquiry was made into generation, diffusion, and chemical action, with special reference to the rat problem; amongst the comprehensive information given as a result of this inquiry it is noted that although woollen stuffs retain a considerable quantity of acid the latter is easily removed by sufficient ventilation or by a raising of temperature. Substances rich in glucose (marmalade, syrup, honey) retain a small amount of acid on their surfaces only. Semi-solids and liquids, it must be remembered, may always retain some of the acid in solution. Cereals, and seeds in general, do not lose their power of germination when fumigated in this way. Merchandise in bulk (e.g., grain), compressed, or in the form of powder (e.g., meal) must be treated in chambers hermetically sealed. The Italian sanitary authorities have fumigated 256 ships during the year March, 1920, to March, 1921; in all, more than 2,300,000 cubic metres of warehouses, dock space, hotels used by emigrants, &c., have been similarly treated; whilst the rapid destruction of mosquitoes in houses and stables by this means has shown hydrocyanic acid to be a valuable factor in the campaign against malaria.

PYELOGRAPHY.

IT was in 1896 that the research of Chapius and Chauvel on the corpse, and of MacIntyre on the living subject, laid the foundations of pyeloscopy. Improvements in X ray technique rendered this method of investigation more and more useful to urologists, until in 1905, Voelcker and Lichtenberg made possible a great advance in the X ray examination of the kidney by injecting the ureter and pelvis with an opaque solution, so revealing changes of form and direction which previously could only be discovered by an operation. The art of pyelography has made great progress in the last 16 years, and developed from a risky procedure into one that is at present rarely fraught with unhappy consequences and is often of the greatest value in diagnosis. The modern technique is described by Drs. C. Beyer and J. De Nobele[1] as follows: "the patient is purged; without any preliminary injection of morphine, the catheter, for preference a No. 12 olivary with two eyes, is passed into the ureter; the cystoscope is removed, the catheter fixed to the thigh, and the patient lying on his back is wheeled into the X ray room . . . . the limbs are flexed on the pelvis to straighten the lumbar saddle . . . . a first radiogram is taken to expose any calculus whose outline might be obscured by the subsequent injection." This is made by a record syringe, the piston of which is pushed home till pain announces that the solution has reached the renal pelvis. A photograph is then taken and examined by the negatoscope, while a finger on the syringe maintains the solution in place. If the photograph is successful, the solution, which is usually 10 per cent. collargol, is allowed to run back and the catheter is withdrawn. In order to avoid accidents the injection must be made very gently and stopped directly the patient complains of pain, the ureteral catheter should be sufficiently fine to allow a reflux of the collargol solution. Several accidents, some fatal, have been attributed to the collargol itself, and the writers above-mentioned suggest that in the future some other opaque solution

[2] Sir John Tweedy, THE LANCET, 1891, vol. ii., p. 1256.

[1] Le Scalpel, May 28th, 1921, p. 530. (This number is devoted entirely to the subject of pyelography.)

such as that suggested by J. E. Burns: 10 per cent. thorium nitrate in 50 per cent. solution of citrate of soda. Naturally where infection is suspected the precautions must be redoubled.

OVARIAN HYPERNEPHROMATA.

SINCE the appearance in 1883 of Grawitz's original paper on the derivation of the common type of malignant renal blastoma, much attention has been directed to the neoplastic potentialities of aberrant suprarenal tissue. On histological and embryological grounds, Grawitz maintained that the renal hypernephromata were derived from groups of cells of the adrenal cortex which had become displaced from their normal environment during development, and although his views have been challenged from time to time, they continued to carry weight until comparatively recent years. Gradually the belief has gained ground that the origin of the renal hypernephromata must be sought for in the kidney itself, but the controversy has left its traces in a good deal of erroneous pathological teaching. The recognition of the occurrence of suprarenal rests, or accessory suprarenals, in other situations than the kidney, and the belief, supported by the authority of Cohnheim, that such rests might be expected to be peculiarly liable to neoplastic phenomena, led naturally to the search for hypernephromata elsewhere, and it was not long before this search was crowned with apparent success. Hypernephromata were described in the liver, the ovary, and elsewhere, and many pathologists taught that this type of neoplasm was fairly common in many situations other than the kidney. There is no doubt, however, that this somewhat fantastic pathology was accepted without a sufficiently critical consideration. It is certainly no longer possible to regard all the renal hypernephromata as being derived from accessory adrenals. On histological evidence alone this view is untenable, and the observations of Bulloch and Sequeira and of Glynn on the true suprarenal hypernephromata is very strong evidence against the Grawitzian theory. These authors have clearly established the fact that tumours of the suprarenal cortex are associated with alterations in the secondary sexual characters, changes which are not seen in patients suffering from renal tumours of the Grawitz type. Scrutinised in the light of this histological and clinical evidence, grave doubts must be thrown upon the diagnosis of hypernephromata in other organs. In the liver, for example, it is doubtful whether more than three or four true examples of this variety of tumour have been recorded; nearly always the apparent hepatic hypernephromata may be regarded as liver-cell carcinomata. Similarly, another origin than that from rests of displaced suprarenal cells must be sought for to explain the so-called hypernephromata of the ovary. In a valuable communication,[1] Prof. Ernest Glynn subjects the recorded instances of ovarian hypernephromata to a critical examination, reaching the conclusion that probably all of them are of lutein origin, and not at all related to the suprarenal gland. He points out that though suprarenal tissue occurs in the broad ligament, as it does in the vicinity of the testicle, no undoubted example of an accessory adrenal has ever been recorded actually within the ovary or the testicle. Again, though there are pronounced differences between the true suprarenal hypernephromata and the ovarian tumours, the latter correspond very closely to the accepted examples of luteomata recorded in the literature. And, finally, suprarenal virilism, the appearance of changes in the secondary sexual characters, does not occur in association with the ovarian hypernephroma. Prof. Glynn would seem to have proved his case fairly conclusively, and has delivered another blow at a theory which has for some time outlived its usefulness.

[1] A Comparison between Ovarian "Hypernephroma" and Luteoma and Suprarenal Hypernephroma, with comments on Suprarenal Virilism, Journal of Obstetrics and Gynæcology of the British Empire. Spring, 1921

THE GOLD MEDAL OF THE ROYAL SOCIETY OF MEDICINE.

THE Council of the Royal Society of Medicine made on July 6th, at the annual general meeting of the Fellows, the first award of its gold medal to Sir Almroth Wright, K.B.E., C.B., F.R.S., in recognition of his valuable services to medicine during the recent war. The medal is the gift of the late Dr. Murray Leslie, and is to be awarded triennially on St. Luke's Day for original discovery in medicine and other allied sciences, or for the practical application of the results of previous investigations of other scientists, or for the most valuable contribution in any other way towards the progress of the art and science of medicine, preventive medicine, or surgery. The medal, a photograph of which is here reproduced to full size, was designed by Mr. E. Carter Preston, the well-known numismatic artist. The obverse represents Hygieia, daughter of Æsculapius, bestowing a wreath upon Research, represented as a kneeling figure holding a lamp. The inscription round the rim is "Auspiciis Societatis Regiae Medicinae," in exergue the motto of the Society, "Non est vivere sed valere vita" and, in field, "Institutae MDCCCV." The reverse represents Cheiron teaching Æsculapius the art of healing; beneath the centaur appears the serpent of Æsculapius. In the field to the left is the bow of Apollo (father of Æsculapius), symbolising the sun, the deliverer from plagues. The fountain on the right suggests the fountain of truth, and the inscription runs "Finis Coronat Opus." The presentation was made by Sir John Bland-Sutton, President of the Society. Dr. C. T. Hagberg Wright received the medal on behalf of his brother, who is at present abroad.

Reproduction of the Gold Medal of the R.S.M.

Obverse. Reverse.

MR. PRIDGIN TEALE.

Mr. Pridgin Teale celebrated his ninetieth birthday on June 28th. From the members of his own profession, from the University of Leeds, and from other public bodies with which he has been so long associated and from many members of the general public,

he has received warm and sincere congratulations. Mr. Teale's career has, indeed, been a remarkable one. The son of a distinguished father, who was surgeon to the General Infirmary at Leeds, he was himself appointed surgeon to that institution in the year 1864. He increased the reputation of the hospital and of the medical school, and in an unobtrusive way he always stood for what was highest and best in professional conduct, though no man was less bound by rules; it was the underlying spirit that dominated his conduct. Mr. Teale's zeal in promoting education, his pioneer work in sanitation, and especially his original methods of popularising the knowledge of this branch of science, are known to all. Among the more formal congratulations which reached Mr. Teale was one from the Council and Senate of the University of Leeds which was presented in person by the Vice-Chancellor, Sir Michael Sadler. In a congratulatory letter Mr. Teale's services are happily referred to. From it we quote as follows: "We thank you for your sympathy with the young; for your alert and resourceful counsel; and, above all, for the example of your life. Your colleagues and friends of more than one younger generation join in cordial and grateful greetings to you, who, though the oldest among us, are still young in heart and mind." On the day following his birthday Mr. Teale was entertained to tea at the infirmary by the board and the Faculty.

Mr. Teale was elected to the staff in the year 1864, the same year that saw the beginning of Sir Clifford Allbutt's and Mr. C. G. Wheelhouse's connexion with the infirmary. It was owing to the willing coöperation of these three men that opportunities were afforded to the younger men in Leeds who were desirous of devoting themselves to medicine or surgery to become connected with the infirmary; and by a self-denying ordinance they agreed that the new rule, which set a time-limit of 20 years for service on the full staff, should apply to themselves. This rule was associated with the provision that, when a member of the staff is, at the end of his 20 years' service promoted to the consulting staff, he retains the right to the use of six beds, and we are glad to note that this is a privilege which has been largely exercised. Mr. Teale, therefore, is still on the consulting staff and has the right to the use of six beds. The gathering at the infirmary was of a very informal but delightful character; there were no speeches, but Mr. and Mrs. Teale received the congratulations of their many friends; two photographic groups were taken, one of the general company which included the board and some medical men who had been especially invited as representing the profession of Leeds, and one of the honorary staff of the infirmary in which, of course, Mr. Teale figured as the oldest member. It is pleasant to record that Mr. Teale retains much of his old alertness of mind and manner; it is little more than two years ago since he gave the introductory address to the University Medical Society, and the students to who it was delivered were delighted and surprised with his charm and vigour. During the last session of the Leeds and West Riding Medico-Chirurgical Society he gave a paper on the subject of lithotrity, an operation which has probably been by no one more deftly performed than by Mr. Teale. Truly "those whom the gods love die young," but it is for this reason—that they never grow old.

MEDICAL COUNCIL FOR THE CARE OF SICK CHILDREN.—On the invitation of the medical board of the Royal Liverpool Children's Hospital a meeting of physicians and surgeons specially interested in the institutional care of sick children took place in the board room of the hospital on July 1st. It was unanimously agreed: "That this meeting constitute itself the Medical Council for the Care of Sick Children of Liverpool and District." Thereafter an executive committee was appointed, and subcommittees were formed, to which the following subjects were referred: (1) the development of increased efficiency through coördination in the care of sick children; (2) after-care; (3) institutional care of sick babies; (4) research and post-graduate instruction.

CONFERENCE ON INFANT WELFARE.

UNDER the auspices of the National Association for the Prevention of Infant Mortality and the National Baby Week Council, a three-day Conference was held at the Central Hall, Westminster, on July 5th to 7th. Judging by the sustained attendances and the enthusiasm, the subject evoked very wide interest. On Tuesday the proceedings opened with an address by the President, the Right Hon. Viscount ASTOR. Sir GEORGE NEWMAN, who was to have presided at this Session, was about to take part in the sittings of the League of Nations at Geneva, which prevented his presence.

An Anti-Waste Conference.

The PRESIDENT said no one would be sorry that the nations of the world were foregathering periodically to discuss matters of importance, such as public health; it must mean a great benefit to the world at large. The issue of the moment was, quite rightly, economy; but it was equally necessary to save every single baby's life. It depended on the parents and others whether a child, when it grew up, would be a producer of wealth, or whether, conversely, it would be a cost and a charge on the community. Let the gathering resolve itself into an anti-waste conference, and let its message to the world be that it was out to prevent loss of all child life due to preventable causes. The recent coal strike was estimated to have cost the country 250 millions sterling; it was very difficult to get the country to recognise the indirect cost of ill-health. The Health Insurance Act statistics showed that the total cash benefits paid for sickness and disability amounted on an average to 14 million working weeks lost in a year. Put in another way, there were 270,000 persons unemployed owing to ill-health for the whole year. Also, there were a million children of school age so physically or mentally deficient that they were unable to receive the full benefit of the education provided. It was said that too much was being spent on education; the cost of education ought not to be reduced, but every effort should be made to see that the children were able to get full value from the education offered. The President proceeded to deal with public health services, including slum clearances and the provision of means of recreation for both children and adults. The question of venereal disease was a very difficult one; it touched morality, sex, the social life of the community, but work in connexion with it should not be neglected because of these things. Turning to the question of milk, he said the country consumed too little milk: the average amount consumed—by men, women and children—was ½ pint per day. The Committee over which he presided found that in the winter, when the supply was reduced, if each child had the amount of milk it required, there would be none left for adults. If milk were a transparent instead of an opaque fluid, it would be much more easy to ensure a pure supply. A glass of milk often hid a multitude of sins. He did not believe there was any likelihood of increased efforts to ensure a pure milk supply resulting in a reduction of the supply. A clean universal supply of milk could only be brought about by general education. Turning to maternity and child welfare, there was, he said, an awakening of the world conscience on this matter; it was recognised that here was the foundation of the work of the countries of the world. There was no wish to break up the home, or to relieve any mother of her sense of responsibility; the desire was to make her feel to an increasing extent her sense of responsibility to her children. The President referred also to the school medical services and their satisfactory growth. In the presence of such a complexity of Governmental intrusion into the life of cities he appealed for a continuance of voluntary effort. In conclusion, he said the public was apathetic largely because the victories of preventive medicine were unseen; it was the failures which were apt to be seen. We did

not want to see the failures, which became evident when epidemics occurred. This country could not afford to lose the progress and the gain in knowledge achieved during the past years, and he was sure those present would feel as a result of the Conference renewed courage and enthusiasm.

Maternity Homes.

Dr. JANET CAMPBELL (of the Ministry of Health) read a paper on Maternity Homes, which we publish in our present issue.

Miss BEAVAN, of the City Council, Liverpool, spoke of the restrictions on this work imposed by municipal economy, and asked what factors in the work should be placed first in importance.—Miss CAMPBELL replied that the right course was to cater for the average mother and the average baby. No great improvement in midwifery service could be expected to be brought about unless in-patient accommodation could be provided where treatment would be available. If adequate salaries could be offered, she did not doubt that more women of education could be induced to take up this work; the need was easily demonstrated. She spoke of the accommodation already available for venereal cases.

Provision for Blind Babies.

Miss WALKER FINLAY, herself afflicted in the same way as those for whom she pleaded, spoke well and eloquently on this subject.—Dr. ERIC PRITCHARD highly praised Miss Finlay's work at "Sunshine House," the home for blind babies at Chorley Wood, Herts. So many of these little inmates were "not wanted" children and had been so badly neglected when they reached the home, that there did not seem much prospect of improvement, but in a short time astonishing progress was noticed.

Dr. C. J. MACALISTER spoke on the Residential Treatment of Ailing Children, and Dr. HOWARD GLADSTONE on the Value of Wards for Ailing Children.

AFTERNOON SESSION.

The afternoon session was presided over by Dr. CLARK, representing the United States National Health Department. He expressed the high appreciation of the Government he represented of the invitation sent by the Council. He also represented the American Public Health Association, which consisted of more than 2000 medical officers of health and others interested in public health problems; likewise he was spokesman here for the American Hygiene Association, a well-established body for the prevention of infant and maternal mortality. In America there was lacking, as yet, the degree of coördination in this work which he had found in this country.

Provision for Unmarried Mothers.

A paper on this subject was read by Mrs. CYRIL SMITHETT, in the course of which she said that though the increase of illegitimacy during the war had not been so great as was expected, since the war there had been a decided augmentation due to relaxation of discipline among girls and lack of parental influence. These unmarried mothers were very glad to accept the help offered them, and there was not nearly enough room in the homes of the National Council for the Unmarried Mother and her Child.

The discussion on this subject hinged chiefly on the means of enabling these mothers to support themselves and their children after leaving the home, and to discovering the male parent and compelling his support. Dr. E. H. T. NASH, of Isleworth, contended that these unmarried mothers were not, as a whole, immoral; and he urged a broad and much more tolerant spirit on the question.

Poor-law Accommodation for Mothers and Infants.

A paper on this subject was read by Miss M. E. BROADBENT, who described the value to the community of the lying-in wards of Poor-law institutional maternity wards during the war, when lack of housing and hospital accommodation created difficulties.

The principal discussion following this paper turned upon a question as to the systematic treatment of the eyes of the newly-born to prevent ophthalmia neonatorum. The CHAIRMAN spoke of the universal requirement in America for the instillation into the eyes at birth of a solution of nitrate of silver.—Dr. H. SCURFIELD said there was no such uniform requirement in this country, and that the practice varied in different parts.—Mr. C. W. GODBERT spoke of the thoroughness with which this matter was dealt with in Manchester, in close association with the eye hospital of that city.—Dr. NASH pointed out the requirement for cleansing the child's eyes contained in the Midwives Act, and the necessity placed on the holder of the C.M.B. certificate to notify to a doctor the occurrence of a discharge from the child's eyes. He also spoke of the provision for the treatment of syphilitic cases without public revelation.—The CHAIRMAN said that Dr. Williams of the Johns Hopkins University Hospital, in the States, kept an accurate record of 10,000 consecutive pregnancies which occurred, taking the period from the seventh month of gestation to the second week after birth, and he found, by an examination of the placental and other fœtal tissues that 26 per cent. of the deaths were due to syphilis. He emphasised the importance of intensive treatment of the syphilitic mother before the birth of the child in producing an apparently normal baby.

Residential Provision for Mothers and Babies.

A paper on this subject was read by Miss J. HALFORD, who described the different means of provision made in municipal maternity homes and in those run by voluntary agencies, and also in convalescent and rest homes for mothers and babies. A fortnight's stay in the latter was all the holiday some mothers ever got. Homes for babies only, both well and ailing, were also dealt with; Miss Halford pointed out that if more of the right kind of foster mothers were available, and if regular medical inspection at Infant Welfare Centres was supplied, this expensive institutional care could be superseded.

Miss Halford, after reading her paper, proposed the following resolution:—

"That closer provision than at present obtains be exercised by the State and local authorities over all institutions which take children of under school age for payment."

It was seconded by Miss MAWSON.

Miss VANCE (St. Pancras) thought a society should be formed for the registration and closer inspection of foster-mothers. Much of the inefficiency of a particular type of foster-mother was due to inadequate payment and the lack of inspection.—Dr. MILLS (Philadelphia), in a breezy and humorous speech, advocated a "Fathers' Day," as such a large proportion of fathers were thoughtless and selfish on these matters, and did not realise what was due to the mothers in bringing up their children. He had addressed men in his city on the subject, where many people willingly received mothers into their families during an important period. The resolution was carried unanimously.

Dr. B. E. POTTER proposed:—

"That this Conference is of opinion that a great deal of unnecessary loss of sight is still being caused by the failure to secure adequate preventive measures and prompt skilled treatment for ophthalmia neonatorum, and urges the Ministry of Health to institute an inquiry into the causes of such failure."

Mrs. RUSSELL (St. Pancras Board of Guardians) seconded, and it was unanimously adopted.

WEDNESDAY MORNING SESSION.

Under the chairmanship of Dr. JANET LANE-CLAYPON, the Conference discussed

The Supply of Milk: Its Physiological and Economic Aspects.

At the commencement a telegram from the Commissioner of Health, Chicago, was read, as follows: "In Infant mortality, average ten years 1907–16, before pasteurisation of milk, 116. Average four years since pasteurisation, 95·5. Diarrhœa and enteritis under two years of age, rate 134 per 100,000 population, before pasteurisation, 100 since."

In the absence of Mr. NATHAN STRAUS, his paper advocating pasteurisation of milk was read by Dr. S. G. MOORE.—A paper on Milk in its Economic Aspect by Prof. R. STENHOUSE WILLIAMS and Mr. J. MACKINTOSH was then read, calling attention to the present discrepancy between the summer and winter prices of milk, in contrast with the almost flat all-year-round rate obtained before the war.—Mr. F. ARNOLD LEJEUNE followed with a paper on The Production of Clean Milk from the Consumer's Point of View, in which he outlined a scheme by which a company concentrating on clean milk production might at once make a fair profit and render a public service.—A paper on The Supply of Milk to Expectant Mothers, Nursing Mothers, and Infants was read by Dr. E. W. HOPE (Liverpool), who emphasised the need for providing milk to infants whose mothers were unable to suckle them. The points made in the discussion can be summarised as follows:—

Dr. H. SCURFIELD considered that we, as a nation, consume too little milk, and he pointed out its great importance as a food, especially in regard to its vitamin content. With some members of the medical profession the potential dangers of milk loomed so large that they discouraged its use. The slogan should therefore be, "Pure milk and safe milk"; hence the aims of the National Clean Milk Society should receive large support. Pasteurisation, as so often carried out in this country, was a farce, and therefore, in the result, a fraud. Dried milk was safe in regard to tuberculosis, and the drying process left the anti-rachitic vitamins intact. The public could largely protect themselves by using a home pasteuriser.—Dr. S. G. MOORE (Huddersfield) emphasised the points made by Dr. Scurfield, and hoped that farmers would rise to the importance of supplying plenty of pure milk.—Dr. W. G. SAVAGE (M.O.H., Somerset) declared the milk-supply of the country was no better now than 20 years ago. There were only two driving forces to bring about a better milk supply: (1) legal compulsion; (2) to make the production and supply of clean milk worth the while of those concerned. Dirty milk was dear at any price. He pointed out that milk which had been pasteurised was more dangerous when allowed to stand than was raw milk, because so many of the protective lactic acid organisms had been killed out by the pasteurisation.—Dr. F. E. WYNNE (M.O.H., Sheffield) considered that fresh, or alleged fresh, cow's milk was an entirely unsuitable medium of nutrition for either adults or children. It was an economic absurdity to give so much attention to transporting vast distances a fluid which was 88 per cent. water; and scientifically it was bad because it presented the consumer with a first-class culture medium for bacteria. He urged the use of dried milk in preference.—Dr. C. W. SALEEBY compared, unfavourably to the British, the physique of Americans with our own, and spoke of the much larger proportion of milk consumed in the States. Milk was a unique food, and it should be produced and consumed in far larger quantities by everybody.

Many other speakers, including Mr. W. BUCKLEY and Mr. TUSTIN as representing the dairy industry, took part in the discussion and a resolution was carried urging the Government to proceed with the Milk and Dairies Bill and to make provision for further regulations therein.

Dr. A. DINGWALL FORDYCE (Royal Liverpool County Hospital for Children), speaking with regard to the sources of milk for babies, considered an advance had been made beyond the pre-war tendency to think that many difficulties in connexion with infant welfare would be solved if only there could be a clean milk supply. The problems to be faced were that of the best food for the baby and that in connexion with over frequent pregnancy. If the State provided food for babies it should obtain the best possible, and that was not cows' milk in any form, but mothers' milk. A certain number of mothers could not nurse their own babies, but a large number with milk had no babies to give it to, and for the purpose of allowing the right milk to be provided it was quite easy to discover whether another mother was disease free. He considered that welfare centres were going back in their educational work by providing such a large amount of proprietary food for infants.

Dr. J. C. DRUMMOND (Lecturer in Physiology, University College, London) dealt with the subject from the physiological point of view, and Dr. HAROLD WALLER (Medical Officer, Royal College of St. Katharine, Poplar) spoke from the biological aspect.—Dr. CECIL L. WILLIAMS emphasised the peculiar value of the milk supplied by the child's own mother.—Miss BRECKENHURST (American Committee for Devastated Areas of Northern France) pointed out that directly the children in those areas had been taken in hand and given milk, either cows' or condensed, or dried, they had immediately increased in weight. It was generally admitted that there was much more infant mortality in the poor districts of large cities than in those parts where diet was more carefully studied and more milk available.—Miss MORSON (Malvern) blamed the doctors for recommending patent foods to the poorer mothers, and the welfare workers for encouraging the sale of dried milk and other preparations, and Dr. MILLS (Philadelphia Hygienic Association) in urging the absolute necessity of breast-feeding, condemned the bottle as being the cause of the increase in enlarged tonsils and adenoids.—Miss BATT (Health Visitor, Chelmsford) thought that worry had a very detrimental effect on the secretion of milk, and urged doctors and welfare workers when dealing with the failure of a mother to supply milk to aim at trying to discover whether their patient had worry of any sort.

WEDNESDAY EVENING SESSION.

Dried Milk.

On Wednesday evening, July 6th, a Special Medical Session, organised by the Society of Medical Officers of Maternity and Infant Welfare Centres, under the Chairmanship of Dr. FLORA SHEPHERD, met to discuss the Uses and Abuses of Dried Milk, the subject being introduced by Dr. SCURFIELD. He thought that nothing but good would result from the more extended use of dried milk, whether for young children, expectant and nursing mothers, invalids, or adults of all ages. As there was no grade A milk to be had, and as pasteurisation gave little or no security at present, he regarded dried milk as the only safe milk on the market. He did not suggest that any milk, however obtained, was suitable for drying; it should always be taken clean from healthy well-fed cows. The only danger of the abuse of dried milk was that some ignorant person might think dried milk from cows, being so easily digested, was an adequate substitute for the milk of the human mother, and it was the business of all infant and maternity centres to counter that danger.

Dr. R. C. JEWSBURY thought the first ideal to aim at was the breast-fed child; secondly, to breast-feed and supplement with modified fresh milk brought to the boil; thirdly, to feed the child on a modified unsweetened condensed milk in preference to dried milk. At present they were somewhat in the dark as to the effect of drying on the vitamins in the milk, but he had seen cases of rickets in children who had been fed on dried milk, and it was probably because they were getting fat in insufficient quantities.—Dr. CLARKE (Baby Hygiene Association, Boston, U.S.A.) gave details of records kept with regard to about 6000 artificially fed babies, which went to show that children fed on dried milk put on more weight than those fed on other forms of milk.—Dr. ERIC PRITCHARD thought they were all agreed that one of the most important elements in correct physiological feeding was the adjustment of balance and provision against excess, especially of the nitrogenous protein constituents. In his view weight was no guarantee as to the successful feeding of children.

As the outcome of further discussion Dr. HAROLD WALLER moved a resolution recommending infant welfare centres to resolve that the tins containing

dried milk should be free from the instructions supplied by the firms.—Dr. H. M SCARBOROUGH seconded the resolution, and the chairman declared it carried unanimously.

THURSDAY MORNING SESSION.

The conference reassembled on Thursday, July 7th, when Sir ARTHUR STANLEY presided.

Dr. HELEN MACMURCHY read a paper on Inheritance and Environment as Factors in Racial Health.

Dr. C. W. HUTT (M.O.H., Holborn) read a paper by Mr. F. I. HOFFMAN, of the Prudential Insurance Company of America, on

The Influence of Weather Conditions on Morbidity and Mortality in Early Infancy,

which resulted in an interesting discussion, in the course of which Dr. NASH and Mrs. LASSEY emphasised the importance of studying the effect of rainfall and of climatic changes on infants and young children. —Dr. CECIL WILLIAMS thought, so far as England was concerned, the great question to be considered in regard to babies was not so much infantile diarrhœa as respiratory diseases brought about by climatic changes.—Mr. SCOTT (Heston Urban District Council) considered that people's energies would be far better spent if they concentrated on removing slums and building better houses by not conforming too strictly to the requirements of the Ministry of Health.—Mr. GODBERT (Manchester) regarded infantile diarrhœa not so much due to heat as to other causes stimulated by the heat, such as the increase in the house fly and the resulting contamination of food, whilst Dr. DUNSTAN BREWER (M.O.H., Swindon) believed that the decrease of epidemics of infantile diarrhœa depended mainly upon getting into touch with earlier cases.

Dr. C. W. SALEEBY read a paper on the

Ante-Natal Factors of Life and Death,

which gave rise to a great deal of discussion. He described as the outstanding fact of infant mortality in the past decade in Great Britain to be the suppression of summer diarrhœa. Passing on to the arguments of the "better-dead" school of eugenists, Dr. Saleeby described the theory that infant mortality is an illustration of natural selection as baseless, completely breaking down even in the one instance—hæmophilia—which might be expected to illustrate it; and considered in turn the genetic, toxi-genetic, gestational, and obstetric factors of the problem.

Mr. JAMES STEWART (Glasgow) maintained that many difficulties did not arise through ignorance, but purely and simply owing to social conditions, and until such conditions were adequately ameliorated, and every mother had all that was necessary for the well-being and comfort of herself and her child, there would be no good done, even though they held conferences to eternity.—Councillor ANGUS MCDOUGALL (Subcommittee on Child Welfare, Glasgow) also emphasised the need of improved social conditions, and Dr. WYNNE thought the more successful they were in their endeavours in reducing infant mortality the more seriously would they have to contemplate what steps they were to take towards reducing the unregulated begetting of unwanted children.

Dr. SALEEBY, in replying to points raised in the discussion, observed that drinking amongst young mothers was a peculiarity of this country. As to improvement in social conditions there was nothing more tragic than a mother doing her maternal duty and breast-feeding her baby when she herself was badly nourished. The first charge on the State ought to be the mothers and the children of the country. We paid the Prime Minister and the Archbishop, why not pay mothers in order that they might properly do that for which they were fitted?

At the afternoon session Dr. GORDON LEY read a paper on a Comparision between Working-class Mothers and those of the Educated Classes from the Point of View of Difficulties Encountered in Pregnancy, Labour, and Lactation.—Miss MCCONNELL dealt with infant mortality in Poland, and Dr. J. H. SEQUEIRA read a paper on Syphilis as an Ante-natal Factor in Racial Health.

Mrs. SCHARLIEB, speaking with regard to Dr. Ley's paper, said there was a time when every mother suckled her own child, but there came evil days when both the doctors and the nurses encouraged mothers to think that it was undignified to nurse their own children, and that it would interfere with the regaining of their figures. She, however, thought that both nurses, doctors, and—most important of all—mothers, were realising that if the nation was to prosper and the infantile mortality to be reduced, the first duty of a married woman, blessed with a child, was to suckle it herself.—Dr. SCURFIELD thought less damage was done by the monthly nurse than by ignorant or slack doctors who did not realise what the baby lost by not being breast fed. But once every woman knew that she must feed her baby and was supplied with the proper amount of information, she would not be put off by any doctor. In his opinion a woman who refused to feed her baby was more a murderess than the woman who, in a state of frenzy, attempted to kill her child.—Dr. DUNSTAN BREWER (Swindon) said although they quite rightly blamed the monthly nurse and the doctor, there was someone else to whom blame could be attached—namely, the school teacher—who could do so much with young people. He had only discovered one thing which rendered mothers physically incapable of feeding their own children, and that was the destruction of the breast tissue.

Mrs. SCHARLIEB, speaking with regard to Dr. Sequeira's paper, urged that they should endeavour to bring about more coördination between the venereal clinics, the infant welfare, the maternity centres, and the tuberculosis centres, so that there might be a reduction of expense and increased facilities for the detection and treatment of venereal diseases. They were acting wrongly if they disregarded the serious warning Dr. Sequeira had given.—Mrs. NEVILLE ROLFE (National Council for Combating Venereal Diseases) hoped that infant welfare organisations would not shirk the question, for it was only with their aid that that very large group in the population, the respectable married woman, could be reached.—Miss AMY HUGHES thought quite young boys and girls should be educated as to the danger of venereal disease, for they were very apt to become infected and pass the disease on to their babies when married.—Dr. SALEEBY said unless the problem was better dealt with than it had so far been venereal diseases would become a deadly menace to the future of the race.

THURSDAY EVENING.

In the evening there was a meeting of the General Council of the Association of Infant Welfare and Maternity Centres for the purpose of discussing the most vital and essential forms of child welfare work.

Miss ZOE PUXLEY opened the discussion, and in doing so regretted the lack of coöperation between the workers in infant welfare centres, both official and voluntary, the main reason being the difference in outlook and point of view. Next came misunderstanding and suspicion, and then prejudice. She urged them to remember that the aims of their work were the things that mattered most, and they could only dimly approach the goal if they all pulled together. If they learnt to put themselves last and the work first the battle would be won. The game was more than the player, as the ship was more than the screw.

Dr. H. KENWOOD (M.O.H., Stoke Newington) said that in public health generally the real need of the hour was for more knowledge of the very simple laws of health. Whatever the baby was fed upon, the parents must also receive the mental pabulum, rendered easily assimilable—peptonised and humanised. In maternity and child welfare work, extended to the school age and followed by medical inspection among school children, they

had a guarantee, given reasonably good economic conditions, of an early reduction in the proportion of the C 3 population.

Mrs. HOOD voiced the views, through a coöperative women's guild, of over 50,000 working-class women when she urged that they should, first of all, consider the welfare of the mother from which the welfare of the child would follow. It was not a bit of good telling a working man's wife that she must stay a fortnight in bed if she was not provided with the wherewithal. She much regretted the great shortage of midwives, especially in view of the fact that panel doctors were not taking confinement cases. If midwives were given a proper status, better remuneration, and a chance of progressing, the supply would soon increase. In conclusion she advocated the provision of home helps for working-class mothers, so that whilst they were obliged to remain in bed after confinement their minds should be free from worry as to household matters. The ideal would, of course, be for working-class women to go into maternity homes or hospitals, but they would have to be educated to it.

Dr. NASH, in urging that the husbands should also be educated, said the hardest worker in the world, and one who knew no trade union eight hours' day, was the working man's wife with a family of children, and the sooner that fact was hammered into the trade union husband the better.—Mrs. BRACKENBURY said that women were learning what was necessary, and would soon find the courage to voice their needs in no uncertain voice, whilst Mrs. FOWLES emphasised the necessity of welfare workers getting into touch with the expectant mothers.—Miss BEVAN (Liverpool) stressed the necessity for coöperation and economic spending, and thought if they were to cut down expenses in regard to welfare work they might look into the expenditure on day nurseries; Miss LEE (Matlock Bath) pointed out the great importance of ante-natal visits in country districts.

Dr. SCURFIELD, in closing the discussion, thought when it could be said that everything that was possible was being done to prevent rickets, bad teeth, and to secure nose-breathers, then all else would follow and the nation could then be classed A 1.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Organisation of the Medical Profession in Ireland.

FOR many years past the organisation of the medical profession in Ireland has been unsatisfactory, and there has been no permanent body able to speak for the profession as a whole. The Irish Medical Association and the British Medical Association exist side by side, each with a membership of about 600. As many members are common to both bodies, probably not more than 900 medical men in Ireland—roughly one-third of the entire number—subscribe to any medical association. Since 1914 the British Medical Association has kept up a branch office in Dublin with a whole-time medical secretary, and Irish medical affairs are to a large extent under the autonomous control of the Irish Committee of the Association. Since neither of the two associations is sufficiently representative to warrant its speaking on behalf of the profession as a whole, it was found desirable in 1913, in the middle of the struggle over the Insurance Act, to form a third body with a broader basis of support in the profession. The Irish Medical Committee, formed by representatives of several local medical committees, and therefore representative of the profession at large, reports annually to a meeting of delegates of the entire profession, and it has received the support of both of the associations previously mentioned, whose secretaries act as honorary secretaries to the Committee. The Irish Medical Committee gained much kudos by its successful work for the profession during the Insurance Act struggles some years ago, and its constitution merits full confidence, but unfortunately it has no funds at its disposal and is dependent on the generosity of a few individual subscribers and on the assistance of the two associations for its existence.

It has long been felt that such a multiplication of bodies concerned with identical interests was uneconomical and unsatisfactory. Two years ago, therefore, the three bodies appointed a Joint Organisation Committee in an attempt (1) to organise the entire medical profession of Ireland into one body; (2) to establish some form of alliance or affiliation between such a body and the British Medical Association. Up to the present little progress has been made in these directions. The political and social condition of Ireland, in addition to rendering travelling and absence from home dangerous or unpleasant, has so occupied all minds as to prevent any constructive medical work. Moreover, before the British Medical Association could recognise such a body as is proposed its constitution would have to be altered, a step which would probably require much deliberation. It is hoped in certain circles that such amendments in the constitution of the British Medical Association may be framed as will meet not only the needs of Ireland, but the wishes of certain overseas branches of the Association. With this view in mind a conference was held at the offices of the Association last week between the Council and representatives of Ireland and the colonies, and certain proposals will be under the consideration of the forthcoming representative meeting at Newcastle-on-Tyne.

Grants to Irish Hospitals.

The Chief Secretary to the Lord Lieutenant of Ireland was asked in the House of Commons recently whether he could state for what period of years the Irish hospitals (or some, and which, of them) had been receiving out of public funds the sum of £16,000 per annum or what other sum; and whether during that period any equivalent grant had been made out of such funds to Scottish or English hospitals. Sir H. Greenwood replied that the grants to Dublin hospitals from the Imperial Exchequer originated in a clause of the Act of Union which bound the Parliament of the United Kingdom to continue certain grants made by the Irish Parliament for the main tenance of institutions for charitable purposes. These grants had been paid by the Irish Parliament to the following hospitals which are still in existence—namely, the Hospital for Incurables, the House of Industry, and the Westmoreland and Meath Hospitals. The Irish Parliament had also contributed generously to the construction of the Rotunda Hospital. The United Parliament, said the Chief Secretary for Ireland, became bound to continue these grants for a period of 20 years, but a far wider view of the contract has been taken, for in fact the grants have been continued to the present day and extended in number. The amounts paid to the hospitals have varied from time to time but were finally fixed at their present figures by the Select Committee on Irish Estimates, 1834, and modified by the Report of the Royal Commission of 1859. Neither English nor Scottish hospitals have directly received similar grants, nor have any Irish hospitals outside of Dublin received them.

Royal College of Physicians of Ireland.

At a meeting of the President and Fellows, held on July 7th, Sir James Craig, the President, announced the award of the Harry Godfrey Massy-Miles Prize to Dr. George Edward Strahan, who was a former student in the school of the Royal College of Surgeons, and served during the war as Surgeon Sub-Lieutenant in the Royal Navy, was mentioned in despatches, and received the Distinguished Service Cross in recognition of his work. The prize was established in memory of Captain Harry Godfrey Massy-Miles, M.C., R.A.M.C., a licentiate of the College, who died in 1918 of wounds received in France, by his widow.

Correspondence.

"Audi alteram partem."

THE FÆCES IN ALIMENTARY DISORDERS.

To the Editor of THE LANCET.

SIR,—In the *British Medical Journal* there has been an interesting discussion on the relative value of clinical and laboratory methods in the investigation of disease. The paper in your columns of July 2nd by Dr. Robert Coope on the "Fæces in Alimentary Disorders" supplies data for comment. As an expert laboratory worker on biochemistry Dr. Coope has found little help from the application of a Gram-stained bacteriological film in diagnosis. He has "found little help from it, and in our present state of knowledge it seems to me not worth while for clinical purposes to take time over it. It is another matter if definite bacteria are suspected, such as the typhoid group or tubercle." It is difficult to understand what the author means by the value of the application of Gram stain in the recognition of a typhoid organism, as this organism is, like *B. coli*, Gram-negative.

These statements are surely inaccurate and misleading. Clinicians who are in the habit of examining the stools by simple staining methods know that in many instances information is obtained from their use that is of much greater clinical value than that furnished by the other methods of examination described by Dr. Coope. The laboratory worker is by no means altogether to blame for the erroneous teaching for which he is sometimes responsible. The clinician has at least equal responsibility. The fault appears to lie in the tendency to excessive specialisation in research, and to the segregation of special laboratories for chemical pathology and for bacteriology away from the immediate proximity of the patient. The field of biochemistry and chemical pathology is considered big enough to fill the whole horizon of the worker. He is disinclined to attach importance to simple bacteriological questions on which he feels, rightly or wrongly, that he has little right to have an opinion. The real condition of affairs obtaining in the human tissues and excretions, one of interdependence of various factors concerned in normal and abnormal nutrition, is overlooked.

If Dr. Coope will coöperate with some of his clinical friends in making a Gram-stained film from the stools in a selected series of cases, careful attention being paid to the diet, the clinical condition of the patient, and the state of the urine, I venture to think that he will profoundly modify some of his teaching.

I am, Sir, yours faithfully,

Edinburgh, July 6th, 1921. CHALMERS WATSON, M.D.

X RAYS IN MALIGNANT DISEASE.

To the Editor of THE LANCET

SIR,—The end results of surgery in some forms of malignant disease—notably, cancer of the uterus—are so far from being satisfactory that experiments in the way of a purely radiotherapeutic treatment are justified. And if X ray treatment is to take the place of surgery, it is certain that the dosage must be large, and, within certain limits, concentrated in time. I say within certain limits, because it is quite possible, and, in my opinion, likely, that a large dose spread over four or five days instead of being administered in one, would be as effective and less risky. It is, however, improbable that for some time to come, in this country at least, professional opinion will countenance non-operative treatment of cancer; and we thus have to consider what is the best method of applying X rays in conjunction with surgery. In the writer's opinion, it is not justifiable to subject patients to the double risk of a major operation and an enormous dose of X rays, which lessens their vitality for many weeks. Rather should we employ a technique which produces a definite improvement in health almost from the first. Such a technique we possess in the repeated medium dose method, which has now been used with success in cancer of the breast, and to some extent in cancer of the uterus, for at least a decade.

It consists in giving the patient, if possible, before operation a series of seven or eight sittings, extending over about a fortnight; and subsequently a course of ten or twelve sittings extending over a month, twice a year for two to three years. Indeed, when practicable, it would be desirable that the patient should have a course every year or eighteen months for the rest of her life—for the "cancerous tendency" remains, no matter by what method an individual growth has been removed. It may be true that a single medium dose excites the cancer cell to activity; of this I have no experience. But it is certain that a series of such doses produce rapid diminution, and even the disappearance, of any palpable cancer masses, if such are present; and in any case has a remarkably beneficial effect upon the physical energy and the subjective well-being of the patient. In making these statements I feel sure that I shall have the approval of nine out of every ten radiologists who have been treating breast cancer during the past ten years. No claim is made that cancer is "cured" by such methods, but courses of X ray treatment given after the manner described do enable patients who show definite recurrence when first seen to recover a fair degree of health, and often to live in comfort for many years. Although this form of treatment was commenced more or less empirically, it probably finds its rationale in recent experiments at the Rockefeller Institute in America, and by Professor Sidney Russ and his colleagues in this country—experiments which have shown that a series of comparative small doses of X rays raises on animals the resistance of the body to cancer implantation. Hence, to give such courses even when there is no ascertainable recurrence may be regarded as a proceeding analagous to preventive inoculations.

The same experiments have shown per contra that a large single dose of X rays reduces the body resistance; and there can be little doubt that, whatever happens to the original tumour, a similar fall occurs in the human subject, and is maintained for many weeks. The danger in cases where there are already existing metastases is thus very evident. It must also be remembered that in the year 1913, at the British Medical Association annual meeting at Brighton, Gauss of Freiburg described a treatment not very dissimilar to that now used at Erlangen; a few months later reports began to come through of severe skin lesions which had come on in some cases as much as a year after the cessation of the treatment.

The fact, on the one hand, that great benefit can be produced by a series of moderate doses, and, on the other, that the single massive dose, whatever its virtues, is not unaccompanied by dangers, will, I think, induce British radiologists, if and when they come to treat certain cancerous tumours by X rays alone, to seek some means of dividing the dose in a manner to minimise its ill-effects while producing an equally good therapeutic result.

I am, Sir, yours faithfully,

F. HERNAMAN-JOHNSON.

Harley-street, W., July 6th, 1921.

THE CIRCULATION IN SHOCK.

To the Editor of THE LANCET.

SIR,—In THE LANCET for July 9th Dr. Leonard Hill and Dr. J. McQueen assert that "the data of systolic and diastolic pressures in the main arteries so laboriously compiled is then information of little or no clinical value." May I be allowed to emphasise this point? The blood pressure in the large arteries is no index of the pressure in the arterioles or in the capillaries. Pressure may rise in the aorta and fall in the capillaries. Contraction of the arterioles tends to reduce pressure in the arterioles, and, in proportion to its intensity, cuts off the blood-supply from the capillaries. It also usually raises pressure in the large

arteries. But if the contraction is sufficiently severe and intense, as in a case of profound shock, fluid escapes from the vascular system, pressure in the arterioles falls, and this fall of pressure extends, quickly or slowly, but surely from the arterioles to all the vessels in proportion to the loss of fluid.

Prof. Bayliss and the Medical Research Committee teach that in the state of shock the capillaries dilate, the blood collects in them as in a sponge, and therefore the blood pressure falls. Dr. Hill and Dr. McQueen assert that in shock the capillaries are "choked with concentrated blood." But surely capillaries choked with concentrated blood, especially if they are also dilated, should cause a red or blue discoloration of the tissues, whereas in a state of uncomplicated shock the tissues are characterised by extreme pallor. Prof. Bayliss writes that "the colour of the skin in white races is almost entirely due to the blood in the capillaries. When these are empty of blood the tissues are white and cold."[1] From this it seems a direct conclusion that in the pale tissues of shock the capillaries are not dilated.

The main argument that the capillaries dilate in shock is stated as follows by the Medical Research Committee: "If in wound shock the lost blood is not in the arteries, and probably not to a great extent in the veins, it must be mainly stagnant in the capillaries."[2] With all due deference to the very great authority behind these reports, I submit that this is not a conclusive argument. Fluid may, and there is abundant evidence that it does, pass out of the vascular system and to a great extent out of the body in the state of shock, leaving the capillaries with all the other blood-vessels contracted and the tissues pale.

I am, Sir, yours faithfully,

London, July 11th, 1921. JOHN D. MALCOLM.

PSYCHOTHERAPY.

To the Editor of THE LANCET.

SIR,—In answer to Sir Bryan Donkin's remarks in your issue of July 9th upon my article Post-War Neurosis, may I be permitted to make two observations:—

1. I did not confuse psychotherapy with psycho-analysis, either intentionally or unintentionally. Having practised hypnotism and suggestion for many years before psycho-analysis, I am well aware of the mass of work done in the field of psychotherapy apart from psycho-analysis. A book like Dr. Ernest Jones's "The Treatment of the Neuroses" is sufficient to expel ignorance on this point. In italicising some of my statements Sir Bryan Donkin has been tempted by his bias against psycho-analysis to overlook the careful wording of my remarks. Using my own italics, I insisted upon "the importance of the sex factor as *a* cause of psychoneurosis," and said further that "it is the recognition of the sex factor which enables us to deal with *such a* neurosis in a satisfactory manner, and effect a proper cure by means of psycho-analysis."—

2. As a matter of fact, all I tried to show in my article is that there is the danger of under-estimating the significance of sex, especially in such cases as are labelled "Post-War Neurosis," and I tried to prove it by giving some typical cases from my own practice.

Like all anti-Freudians, Sir Bryan Donkin of course admits—at least in theory—the validity of the sex factor as "a cause of mental and nervous disorders"; indeed, he finds nothing new in this. It is only when a psycho-analyst proceeds to apply the theory in practice that he demurs. Yet he himself says: "There is no doubt that in certain periods and certain circumstances the prevailing repression of the sex impulses leads to the establishment of some form of neuropathy or psychopathy." My own cases only tried to show this principle in its working. Sir Bryan Donkin goes on to say that "a great measure of 'repression' is the rule of custom in nearly all civilised countries. Yet neuropaths and psychopaths are still far from dominating any civilisation by their numbers." Just so! Freud has pointed out repeatedly that all civilisation is due to the repression of primitive impulses; but he was the first to show that it is the inability to "repress successfully" that causes the characteristic "conflict" of the neurotics (who do not necessarily form the majority of the population). If the time is not yet for Freud's view to be accepted as established truth, there is certainly no justification for proclaiming it confidently as "false psychology."

I am, Sir, yours faithfully,

Manchester, July 9th, 1921. S. HERBERT.

[1] Principles of General Physiology, p. 705.
[2] Special Report Series No. 25, p. 123.

OPEN ETHER ANÆSTHESIA DURING THROAT OPERATIONS.

To the Editor of THE LANCET.

SIR,—The deep anæsthesia needed for tonsil dissection has been found by some a path rather overhung by brambles. As an anæsthetist and as a patient I yield to no one in praise of chloroform, but in these cases I am sure that ether or ethanesal is preferable, if a Grand Guignol of possible thrills is to be avoided.

I therefore welcome the publicity Dr. H. Sington gives to warmed ether by the description he publishes in THE LANCET of July 2nd of his apparatus. I designed and have used since six years a similar one. It was described and illustrated in the *Journal of the Royal Army Medical Corps* of February, 1919, and reproduced in an article I submitted at the Sixth Meeting of the Interstate Association of Anæsthetists at Pittsburg, and published in the *American Journal of Surgery*, Quarterly Supplement of Anæsthesia, January, 1921. This apparatus is now manufactured by Messrs. Coxeter.

I am, Sir, yours faithfully,

CHARLES T. W. HIRSCH,
Anæsthetist, Metropolitan Ear, Nose, and Throat
July 10th, 1921. and Royal Ear Hospitals.

The Services.

ROYAL ARMY MEDICAL CORPS.

Capt. and Bt. Maj. F. C. Cowtan resigns his commn. on appt. to the R.A.F.

Capt. J. A. Binning retires, receiving a gratuity.

The undermentioned temp. Capts. relinquish their commns.: (Actg. Maj.) G. Cooper, and is granted the rank of Maj.; H. H. Perry, and retains the rank of Capt.

Lts. (temp. capts.) A. H. Clarke and E. P. N. Creagh to be Capts.

DEFENCE FORCE.

To be temp. Capts.: G. H. H. Waylen, H. H. Back, and J. Marshall.

1st (S. Midland) Fd. Amb.—Temp. Capt. C. W. J. Brasher relinquishes his commn.

1st (Lowland) Fd. Amb.—Temp. Maj. E. P. Cathcart relinquishes his commn.

3rd (Wessex) Fd. Amb.—To be temp. Capt.: A. E. Knapp.

INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Col. A. W. T. Buist and Maj. C. G. Seymour.

The King has approved the relinquishment of their commns. by the following officers:—Capts. (T.C.) Jesudason Sellyah David, Giddu Siva Ram, Subrata Chander Sen, Jitendra Nath Sen Gupta, Ram Sarup Gupta, Shankar Ganesh Chavan, Santokh Singh, George Patrick de Silva, Sardari Lal Chopra, Chuni Lal Nandi, Ikram Ali Sufi, Lieut. (T.C.) Mangalore Gopal Kini, Jehangir Kaikhusro Nariman (granted the rank of Maj). Subrata Chander Sen (to retain the rank of Capt.). Captains: Nariman Bejanji Kolsawalla (granted rank of Capt.), Govindarajapuram Rama Pattar Parasuram, Parmeshwari Das, Gulvadi Ram Dinker Rau, Nibaran Chandra Mitra, Kharg Bahadur Singh Kharki, Sheikh Guhulam Rasul, Kshitindranath Das Gupta, Satya Sakha Maitra, Mulk Raj Sawhney, Shripad Bhaskar Gothaskar, Mohamed Ajmal Husain, Lt. Kali Prasad Sinha.

Obituary.

SIR GEORGE HENRY SAVAGE, M.D., F.R.C.P. LOND.,

CONSULTING PHYSICIAN FOR AND LECTURER ON MENTAL DISEASES AT GUY'S HOSPITAL.

Sir George Henry Savage, who died at his residence in Devonshire-place on July 5th, at the age of 78, was a recognised authority—perhaps the most widely known in the kingdom—on psychological medicine, a subject to which he had devoted a long and strenuous life from the time of his appointment as assistant medical officer to the Bethlem Hospital in 1872. The son of a chemist and druggist of Yorkshire stock he was born at Brighton in 1842, and after being educated at Brighton entered as a medical student at Guy's Hospital, where he subsequently won the Treasurer's Gold Medal. In 1864 he qualified with the M.R.C.S. Eng., obtained the L.R.C.P. Lond. in the following year, and also graduated M.B. at the University of London, proceeding to the M.D. in 1867. After holding house appointments at Guy's Hospital and at the Sussex County Hospital, and a spell of general practice in the north of England, he became house physician to the Royal Bethlem Hospital, a post which he held for seven years, a period which proved the turning point of his life. He took the M.R.C.P. while holding this appointment, being elected to the Fellowship in 1885, seven years later. In 1879 he was appointed physician-superintendent, occupying that position for 10 years, and his simple yet authoritative teaching attracted visitors from the United States, the colonies, and the continent, while he was in great request as a post-graduate teacher, particularly for the M.D. degree of the University of London. He also delivered systematic lectures on mental diseases to the students of Guy's Hospital, where he was physician for mental diseases.

For over 20 years he was consulting physician to the Royal Institution for the Mentally Deficient at Earlswood, which he visited almost regularly once a month, giving advice to the staff on points of detail, and taking the greatest interest in the patients, many of whom became warmly attached to him. His great literary capacities were mainly revealed in sporadic essays and addresses. He edited the *Journal of Mental Science* for some time, added largely to our conceptions of mental diseases by his practical knowledge, and enriched the literature of the subject with a sound manual and many addresses and lectures. In 1907 he delivered before the South-West London Medical Society the Bolingbroke Lecture, taking for his subject the Factors of Insanity, and in the same year the Lumleian Lecture before the Royal College of Physicians of London, his subject being the Increase of Insanity. Two years later he was appointed Harveian Orator of the Royal College of Physicians, when he delivered an admirable oration upon Experimental Psychology and Hypnotism.

He was at different times examiner in mental pathology at the University of London, and president of the Medico-Psychological Association. In 1912, the year in which he was knighted, he became the first president of the newly formed section of psychiatry of the Royal Society of Medicine.

J. T., a personal friend, gives the following intimate picture of Savage:—

By the death of Sir George Savage English medicine is the poorer for the loss of a great personality. Savage touched medicine at many points, although in his specialty he was *facile princeps*. His early experiences in general practice in Cumberland were no doubt a potent factor in evoking wide medical understanding and sympathy. His work there was exacting, often entailing 20 miles or more on horseback, but it gave him an experience which he himself always described as invaluable. When he came to Bethlem there were suspicions in some minds that mental disease was, in many instances, physical in origin, and Savage was one of the earliest to recognise and to insist upon, for example, that general paralysis was the result of structural changes in the nervous system. Those of us who had the privilege of going round with him at Bethlem can never forget his insistence on the dictum, "show me a case of general paralysis and I shall show you a case of syphilis." But to those who knew Savage intimately—a privilege which the writer enjoyed—the extraordinary width of his non-medical interests was a source of continual wonder. He had, for example, a remarkable collection of minerals, and the writer can never forget a memorable evening when he was taken to an upper room where he and his wife enjoyed a wonderful demonstration of his specimens, often with the graphic history of how he came by them, interposed. Sometimes they were the result of a descent into a coal or lead mine, sometimes a present from a grateful patient in Cumberland who knew that the "young doctor" was interested in curious stones, and sometimes they were an accidental find in the course of a long moorland ride to see a patient.

Savage was also a remarkably keen botanist. At a very early age he compiled, or assisted in compiling, a flora of Sussex and his interest in the flora of his native county, and, indeed, in all flowers, remained unabated. The writer once spent a happy afternoon with him at Shoreham hunting—unsuccessfully as it happened—for the *Trifolium stellatum*, which Savage had found there 40 years before! It is still there—an escape from the Levant through a wreck which occurred more than 100 years ago. But the afternoon was not wasted, for Shoreham is rich in many curious things, and Highdown Hill to which we went afterwards, as Savage demonstrated it, was a mine of treasures. To see Savage when he came to a place where something *should* be growing go down on his knees and push up his glasses or leave them hanging on one ear, was to witness the keen joy of the "seeker," and it was not often a seeker who sought in vain.

Savage touched life at so many points that he was always a delightful companion. He was an alpine climber of no mean achievement, and but for his deafness would have been President of the Alpine Club. He was a fisherman who fished with the dry fly for three years before he caught a trout, although he caught many afterwards, and he had done most things in sport and nearly all he had done well. But, after all, it was the man we all loved, the many-sided in his sympathy and understanding, the big-brained vigorous bodied man, with his rich intellect and his strong body who yet had time to think of "the little things that matter."

Sir George Savage married first, in 1867, a daughter of Mr. Jacob Walton, of Alston Moor; and secondly, in 1882, a daughter of Dr. H. Gawen Sutton, physician to the London Hospital. This obituary notice would not be complete without recording that Savage was, from the start of the movement to the end of his life, a consistent supporter of the cause of medical education for women.

JAMES ACWORTH MENZIES, M.D. EDIN., M.A. DUNELM,

PROFESSOR OF PHYSIOLOGY AT DURHAM UNIVERSITY COLLEGE OF MEDICINE, NEWCASTLE-UPON-TYNE.

THE death of Dr. James Acworth Menzies—professor of physiology at Durham University College of Medicine, Newcastle-upon-Tyne—on July 8th, at his brother's residence in Luton, brought grief to numerous friends, for he was beloved by all who had the privilege of his acquaintance. Dr. Menzies was a son of the Rev. R. Menzies, of Riding Mill, Northumberland, and he married a daughter of the eloquent and outstanding Rev. Alexander Maclaren, D.D., of Manchester. After studying medicine at the University of Edinburgh, where he qualified M.B. and C.M. in 1890, he was appointed demonstrator of physiology in the University of Manchester, a post which he held until 1906. Menzies endeared himself to all—colleagues and students alike—who came in intimate relation with him. Patient and untiring in his devotion to the interests of his students and to his department, Menzies proved himself a genuine and eminently successful teacher, who soon attracted and retained not only the respect but even the love of his pupils. Never was anything a trouble to him where the interests of students were concerned.

Circumstances determined him to quit for a time—but it was only for a time—the pursuit of physiology, and he turned to ophthalmology, acting during 1896-97 as house surgeon of the Royal Eye Infirmary, Manchester, and as a successful consultant in Rochdale

where he devoted all his attention to diseases of the eye. In a short time he acquired a large consulting practice. Still retaining the idea of becoming an academic teacher of physiology, he again became a demonstrator of this subject. During his demonstratorship in the University of Manchester Menzies carried out original work on the spectral and other characters of derivatives of hæmoglobin for which, from the University of Edinburgh, he, in 1894, obtained the degree of M.D. with first-class honours. Appointed lecturer in 1911 in the Medical School of Newcastle-upon-Tyne, first under Sir Thomas Oliver, he held this post with marked success until 1915, when, on the transference of Prof. F. A. Bainbridge to London, Menzies became professor of physiology—a post he held until his death. Besides his contributions on methæmoglobin, and the action of acids on the blood corpuscles, on the secretion of bile, on vision in children, the urine in the frog and the frog's kidney, Menzies' name will, perhaps, be best known by the popular and successful "Essentials of Physiology," published jointly with Bainbridge. Prof. Menzies leaves a widow and a daughter.

Public Health Services.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Borough of Royal Leamington Spa.

Dr. W. L. M. Goldie points out at the beginning of his report for 1920 that the population of Leamington is exceptionally constituted. The town is a health resort, a residential district for retired persons, and a residential suburb for people who work in Coventry and Birmingham. There are no industries worth mentioning, and the population is mainly concerned in supplying the wants of residents and visitors. The estimated population for 1920 was 29,445, the recorded death-rate 13·04, and the death-rate corrected for the age and sex constitution of the population 10·83. The infant mortality rate was 62·5, the death-rate from pulmonary tuberculosis 0·30, and the birth-rate, as in other towns, showed a great increase on the previous year. In 1919 there were 456 births and in 1920 654, making a rate of 22·2, the highest recorded since 1888. Commenting on the infant mortality rate Dr. Goldie says: "It is a cause of regret that the infant welfare clinic up to the present time does not appear to have attracted those mothers in poorer circumstances to whom it might be thought advice as to the upbringing and feeding of their children would be most beneficial." A community like Leamington should afford an ideal opportunity for intensive child welfare work, helped by voluntary workers. The borough also has its housing problem. For some years before the war, despite the increase of population, there had been a marked diminution in the number of houses annually erected; the shortage was estimated in 1919 at 529. To meet this need schemes have been sanctioned for the erection of 166 houses, a number obviously inadequate for the needs of the town. Vaccination is not fashionable in Leamington Spa. Out of 580 children born between July 1st, 1919, and June 30th, 1920, and alive at the latter date, only 29 per cent. were known to have been vaccinated.

West Gloucestershire United Districts.

The rural districts of East Dean, Gloucester, and Lydney, and the urban districts of Awre, Newnham-on-Severn and Westbury-on-Severn are dealt with in Dr. O. W. Andrews's report for 1920; the area covered is nearly 100,000 acres in the Forest of Dean, around the city of Gloucester, and between the Severn and the Wye. The two most important industries are coal-mining and tin-plate manufacture. The population estimated for 1920 was 44,314; a remarkable increase in the birth-rate is reported—from 19·3 in 1919 to 28·6 in 1920. The death-rate was 12·6 per 1000 and the infant mortality rate 57·2. The figures, it is pointed out, compare favourably with those for England and Wales, and it is doubtful if any other coal-mining district is able to show as low a rate for infant mortality. The housing problem remains unsolved, although substantial progress has been made in two portions of the district, more particularly in Gloucester Rural District, where 19 houses were actually completed in 1920 and 65 others were in course of erection. Work at the shipbuilding yards at Beachley and Chepstow caused a demand for houses, but the closing down of the yards has ended this artificial demand and houses are now only wanted for bonâ-fide residents. In the near future in the agricultural portions of the district the need for more houses is expected to become reduced, as more and more land is going out of cultivation on being converted into permanent pasture, and the demand for agricultural workers gets regrettably less. A separate report is included for each of the six districts, and that for East Dean contains an interesting note on the maternity and child welfare work carried out during the year by the Cinderford Mothers' Club and Babies' Welcome.

Corrigendum.—In the notice of Bootle School Medical Service, which appeared in THE LANCET of June 25th, 1921, p. 1385, the second paragraph should have commenced as follows: In the year 1920 there were 3687 routine and 2264 special inspections, while 5808 re-examinations were made; and since the inauguration of school medical inspection in 1908 there was an average attendance of 11,424 children, &c.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The annual meeting of the Fellows of the College was held on July 7th, for the election of four members of the Council. Sir Anthony Bowlby, the President, was in the chair. 923 Fellows voted, and of these seven were personal votes. Three voting papers were spoiled. The result of the voting was as follows:—

	Votes.	Plumpers.
H. J. Waring	415	3
F. F. Burghard	410	2
C. H. Fagge	353	47
W. T. Thomas	331	34
L. B. Rawling	271	10
Victor Bonney	247	14
J. H. Fisher	214	31
R. J. Howard	193	17
A. H. Cheatle	186	5
D. J. Armour	124	9
W. Turner	94	3

The President declared Mr. Waring and Mr. Burghard to be re-elected, and Mr. Fagge and Mr. Thomas to be elected, members of the Council. Mr. H. J. Price and Mr. Willmott Evans acted as scrutineers.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—At the annual meeting of the metropolitan branch held on July 8th, Dr. W. H. Hamer, M.O.H. Administrative County of London, was elected president of the branch for the forthcoming session.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.—The following have been admitted as Fellows of the Faculty:—

Charles Cameron, M.B., Ch.B.; Charles G. A. Chislett, M.B., Ch.B.; James P. Crawford, M.B., Ch.B.; Lachlan Grant, M.D.; James L. Gregory, M.B., Ch.B.; Robert Kennedy, M.D., D.Sc.; David D. Logan, M.D., D.P.H.; and James E. Middlemiss, M.R.C.S., L.R.C.P.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR THE DIPLOMA IN DENTAL SURGERY.

Kenneth George Hyland, Evan Elwyn Lewis, and John Christopher Leslie Phillips.

EXAMINATION FOR THE DIPLOMA IN PUBLIC HEALTH.

Frederick Campbell.

ARTIFICIAL LIMBS FOR PENSIONERS.—The Minister of Pensions has appointed a Committee to inquire into the arrangements for the supply and repair of the various types of artificial limbs, which are provided under the Royal Warrants and Orders in Council, and into the comparative advantages of the metal limb and the wooden limb; and to make recommendations thereon. The members of the Committee are: Sir Archibald Williamson, Chairman; Prof. A. F. C. Pollard; Major Maurice Sinclair, C.M.G., R.A.M.C.; Major M. P. Leahy; Major A. A. Atkinson; Sir Lisle Webb, Director-General of Medical Services, Ministry of Pensions; Mr. Frank Cecil Meech, ex-Corporal of Horse, Royal Horse Guards. Mr. W. J. Sullings has been appointed Secretary of the Committee.

VOLUNTARY HOSPITALS COMMISSION.—The following nominations to the Voluntary Hospitals Commission have now been made:—

The Earl of Onslow (Chairman), Lord Clwyd, Captain W. E. Elliott, M.C., M.P., Sir Robert Hudson, G.B.E., and Mr. D. O. Malcolm, nominated by the Minister of Health.

The Marquess of Linlithgow, nominated by the Secretary for Scotland.

Sir Napier Burnett, K.B.E., M.D., nominated by the Joint Committee of the British Red Cross Society and the Order of St. John of Jerusalem.

Sir Cooper Perry, M.D., F.R.C.P., nominated by King Edward's Hospital Fund.

Mr. H. Wade Deacon, C.B.E., nominated by the British Hospital Association.

Sir John Rose Bradford, K.C.M.G., M.D., nominated by the Royal College of Physicians.

Sir George Makins, G.C.M.G., F.R.C.S., nominated by the Royal College of Surgeons.

Dr. R. A. Bolam, O.B.E., nominated by the British Medical Association.

The remaining member will be nominated by the Scottish Committee of the British Medical Association, whose nomination has not yet been notified. Mr. L. G. Brock, C.B., Ministry of Health, has been appointed Secretary to the Commission.

GREAT NORTHERN CENTRAL HOSPITAL OF RECOVERY: SUMMER FÊTE.—On Saturday last the Princess Royal accompanied by Princess Maud, opened the Hospital of Recovery, which is charmingly situated at Grovelands Home Park, Old Southgate. The Princess Royal inspected a number of patients who were lying in beds in the open air, and afterwards went through the wards of the hospital. Short addresses were delivered, amongst others, by Sir G. Lawson Johnston, treasurer, and Mr. G. B. Mower White, senior surgeon to the hospital, who remarked that the cost of new accommodation was substantially reduced by the system of transferring less serious cases from the main hospital to the present building. A feature of the entertainment provided was the Maypole dance and country dances by children, trained by Miss Sayer, of Finchley, in aid of the children's ward balcony, while the band of the Coldstream Guards played during the afternoon and evening. At present 45 beds are occupied at Grovelands, but this number can be increased to at least 70 when sufficient funds are forthcoming. The Hospital of Recovery was presented to the Great Northern Central Hospital by the Southgate Voluntary Aid Organisation, and was used during the war as a hospital for wounded soldiers.

METROPOLITAN HOSPITAL SUNDAY FUND.—The following are among the amounts received at the Mansion House. The total to date is £70,000.

	£	s.
St. Columba's Church of Scotland, Pont-street ..	720	0
St. James's, Piccadilly	428	0
Holy Trinity, Sloane-street	304	0
St. Paul's, Knightsbridge	265	0
St. Jude's, South Kensington	244	0
St. Peter's, Belsize Park	193	0
St. Anne's Wandsworth	183	0
Christ Church, Gipsy Hill	174	0
Greek Church, Bayswater	156	0
St. George's, Hanover-square	154	0
St. Andrew's, Frognal	152	0
Temple Church	147	0
Bromley (Kent) Churches and Brixton Independent Church .. .. each	145	0
St. Ann's, Stamford Hill	130	0
All Saints, Knightsbridge	127	0
St. Philip's, Kensington	125	0
St. Margaret's, Westminster	121	0
Islington Parish Church	105	0
Donations have been received from—		
London Joint City and Midland Bank, Ltd., and Lloyd's Bank, Ltd. .. .. each	1000	0
Forestal Land Timber and Railways Co., Ltd. ..	262	10
Alfred Farquhar, Esq.	100	0

FEDERATION OF MEDICAL AND ALLIED SCIENCES: ANNUAL REPORT.—The report for 1920–1921, issued by the Executive Council of the Federation, opens with the statement that the Federation was registered on March 29th last under the Companies Acts as an Incorporated Association. The Council claims on behalf of the Federation, which has now completed the second year of its existence, a considerable advance towards true representation of the members of the medical and allied professions—an advance which, despite the hampering effect of present high prices and limited financial resources, permits a hopeful outlook for future success. The past year is described as memorable for the introduction of legislative measures involving radical changes in the conduct of the health services of the country. The voluntary hospital system and the independence of private practice have been threatened; prodigal schemes for the coördination of medical services have failed, but rather because of national poverty than because of any united action on the part of the professions affected. Those professions are now awakening to the necessity of fuller participation in the councils of the nation. The bringing of moderate and reasoned views to the notice of those responsible for the formative stages of legislative measures, rather than the application of criticism at a later stage, has been the aim of the Council, and much of the useful work thus performed is not immediately apparent. Amongst other activities in this direction may be mentioned the assistance given to the Medico-Psychological Association of Great Britain and Ireland in support of certain amendments to Clause 10 of the Ministry of Health Miscellaneous Provisions Bill, and the memorandum and questionnaire sent to all constituent societies of the Federation on the subject of Clause 11 of the same Bill, which sought to establish municipal hospitals and authorise rate maintenance of voluntary hospitals. At a conference of the Federation, held on Nov. 5th, resolutions were unanimously adopted expressing regret at the introduction of health legislation involving important questions of principle in a Miscellaneous Provisions Bill; maintaining that the public interest demanded that the Minister of Health should consult collectively the medical, dental, pharmaceutical, nursing, and midwives' professions, and others concerned with public health; pointing out that the voluntary hospital system should now be supported by State aid, but that the system of patients' contributions towards their maintenance, and the attempts to link up voluntary hospitals with Poor-law infirmaries, should be given fair trial; and emphasising the necessity, in the event of the establishment of municipal hospitals, of clearly-defined representation of the professions concerned on all bodies responsible for the administration of such hospitals. The support of the Federation was also sought by the British Dental Association in the introduction and passage of the Dentists Bill in Parliament. The Council was asked to express an opinion regarding the new panel record cards, and advised a fair trial of the latter. The Draft Regulations, issued under the Dangerous Drugs Act, 1920, engaged the attention of the Council; the views of the constituent societies were obtained concerning certain clauses, and representations were thereupon made to the Home Secretary and incorporated in the amended regulations now issued. Amongst other details of internal organisation of the Federation, the nucleus of a "citizens' council" has been formed to provide the Federation with a body of representative lay opinion on matters of public health. With a view to discussing means of coöperation with certain bodies not represented in the Federation, a conference was arranged on Feb. 1st, 1921; the Royal Colleges, the British Medical Association, the Society of Medical Officers of Health, the National Medical Union, the Medico-Political Union, and the Federation were invited to send delegates. The four last-named bodies accepted and attended the conference, which adopted resolutions urging the medical profession to concentrate its efforts and speak with one voice when the need arises, and expressing the opinion that the only method at present available for such concentration of effort is a federation of representative bodies. No medical candidates have stood for Parliament during the year; the Council has interviewed two prospective candidates, and has in mind the possibility of a general election. Various associations have been elected to the Federation, and one society has withdrawn. Sir Berkeley Moynihan had consented to be elected the first President of the Federation on its incorporation, and Sir Malcolm Morris (Chairman of the Executive Council during the past two years) was at the same time elected the first Vice-President. The offices of the Federation are shortly to be transferred to more suitable premises, where a conference hall will be available. The Council has decided to publish a weekly paper devoted to the national aspect of the work of the medical and allied professions, and a subcommittee has been appointed to make the necessary arrangements.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, JULY 12TH.

National Insurance Bill.

On the motion of the Earl of ONSLOW, the National Health Insurance Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, JULY 6TH.

Medical Staff of the Health Ministry.

Sir J. D. REES asked the Minister of Health whether the 32 doctors on £1000 a year, who were appointed by his predecessor, were still retained at his Ministry; and, if so, when he would dispense with their services.—Sir A. MOND replied: I presume my hon. friend refers to the Regional Medical Officers. If so, the answer to the first part of the question is in the affirmative. In answer to the second, I refer him to my statement on May 12th, introducing the Ministry of Health estimates, in which I made it clear that after personal investigation I thought that this staff does useful work, and should be continued. In any case, I am not in a position to dispense with their services except on the terms of their engagements.—Sir J. D. REES: Is not the right hon. gentleman examining the situation with a view to dispensing with their services as soon as their agreements allow, and has he inquired into the feeling locally where these gentlemen work as to the necessity for their appointment?—Sir A. MOND: As I have said, I have personally gone into the work of the officers concerned, and am satisfied that they are doing very useful work. In any case their period of service would not come to an end for several years.—Colonel ASHLEY: Are we really to understand that the Ministry of Health have tied themselves down for several years in the engagement of their public officials, and is that not a most extraordinary procedure?—Sir A. MOND: In view of the fact that most Government officials are engaged for life in the Civil Service I think that a temporary engagement for five years in an important office is not a very unreasonable agreement.—Colonel ASHLEY: Are Government officials never dismissed?—Captain COOTE: Is it not a fact that the public health has never been so good as it is to-day?—Viscountess ASTOR: Is not infant mortality going down?—No further answer was given.

Kinematograph Lights and Blindness.

Captain Viscount CURZON asked the Minister of Health whether the Committee on the Cause and Prevention of Blindness had as yet reported upon the question of the injury to eyesight resulting from the extreme power of lights used in film production; and whether any action was contemplated as a result.—Sir A. MOND replied: I have received the Report of the Committee referred to. Their conclusion is that there is evidence of only transient injury to the eyes having occurred in a few cases and that such injury was associated with the use of a particular open arc lamp without a proper screen. I have received an assurance from the Incorporated Association of Kinematograph Manufacturers that no member of the Association will permit any open arc lights to be used in their studios for general illumination without glass filters, and in view of this I do not consider further action necessary.

Licensing Reform.

Major KELLEY asked the Attorney General when he proposed to introduce a Bill incorporating the recommendations of the recent conference on the revisal of licensing restrictions.—Mr. SHORTT (Home Secretary) replied: My right hon. friend has asked me to reply. He hopes that the Bill may be introduced at the earliest possible moment, but it is not possible at present to be more definite.

Scottish University Grants.

Sir ROBERT THOMAS asked the Secretary for Scotland whether his attention had been called to the fact that on pages 271 and 286 of the Returns from Universities and University Colleges in Receipt of Treasury Grants, 1919–20 [Cmd. 1263], it was stated that the Universities of Glasgow and St. Andrew's received no grants from local authorities, and that in the statements of accounts on pages 274 and 288 of the same publication, it was shown that Glasgow University received £8700 and St. Andrew's University received £4500 in grants from local authorities; whether he would say which of these statements was correct; and whether he would say exactly from what source these sums of £8700 and £4500 were derived.—Mr. MUNRO: The headings on pages 274 and 288 of the Return referred to are in my judgment somewhat misleading. In point of fact there are no grants made to the Universities of Glasgow and St. Andrew's from local rates. The sums mentioned by my hon. friend are annual payments made from the Local Taxation (Scotland) Account under the Education and Local Taxation Account (Scotland) Act, 1892, out of the Scottish share of moneys made available by Statute for relief of local taxation in the different parts of the United Kingdom. These payments to the Scottish Universities reduce the amount which might otherwise be distributed among local authorities in Scotland in relief of local rates, and therefore might be said to represent indirect contributions from the rates to the Universities.

An Epileptic Soldier's Treatment.

Viscountess ASTOR asked the Minister of Pensions whether he was aware that F. J. Horn, late Private No. 241,346, Devon Regiment, was ordered residential institutional treatment which he obtained at the Maghull Epileptic Colony, near Liverpool; that, owing to the death of his wife and to his having seven young children, he was obliged to leave the institution before his treatment was completed; whether the institution was prepared to readmit him, but he was unable to leave home, although his condition was becoming worse, as he could not obtain help under Section 9, Sub-Section (i) of the War Pensions (Administrative Provisions) Act, 1918; and whether, since he could not get an adequate grant from the United Service Fund, it was possible to give any further financial help.—Major TRYON replied: My right hon. friend is having immediate inquiry made in order to ensure that this man shall receive such medical treatment as is appropriate to his condition. With regard to the last part of the question, I would point out that if this man becomes an in-patient of an institution not only is he maintained free of cost, but a sum of 88*s.* a week (less any pocket money he may require) becomes available for his children.—Colonel C. LOWTHER: Does this mean that he will get outdoor relief?—Major TRYON: It is not a question of outdoor relief. It is a question of allowance paid by the Ministry of Pensions to the children of those who are under treatment for war disability.

Tuberculosis Statistics.

Mr. WIGNALL asked the Minister of Health the number of cases of tuberculosis for the years 1914–20, giving each year separately.—Sir A. MOND replied: The number of cases of tuberculosis notified in England and Wales in each of the years 1914 to 1920 is as follows:—

(A) Pulmonary Tuberculosis. (B) Other Forms of Tuberculosis.

Year.	(A)	(B)	Total.	Year.	(A)	(B)	Total.
1914	76,109	23,388	99,497	1918	71,631	18,942	90,573
1915	68,309	22,283	90,592	1919	61,154	16,357	77,511
1916	68,109	22,799	90,908	1920	57,844	15,488	73,332
1917	68,801	20,884	89,685				

THURSDAY, JULY 7TH.

Hastings Pensioners and Regional Director.

Mr. FREDERICK ROBERTS asked the Minister of Pensions if his attention had been drawn to the fact that a letter was forwarded to the Department from Hastings on June 23rd regarding the position of various pensioners in that town: whether he was aware that in reply the regional director stated that all cases were required to be dealt with in the first instance by the local war pensions committee concerned; and whether, in view of the fact that all the individuals had placed their cases before the local committee previous to the communication being forwarded, he would have inquiries made into the various cases concerned.—Mr. MACPHERSON replied: The answer to the first two parts of the question is in the affirmative. The fact stated in the last part of the question, however, had not previously been brought to notice, and in view of that fact I am now having further inquiries made. I will inform my hon. friend of the result.

Phthisical Pensioners and Widows' Pension.

Dr. M'DONALD asked the Minister of Pensions if a widow whose husband had died from phthisis within two years of discharge from the army, owing to debility, was entitled to a pension.—Mr. MACPHERSON replied: It is not possible to give a categorical answer to this question, as each case has to be considered on its merits. I may say, however, that it has frequently been found possible to award full pension to the widow when the husband's death has occurred in the circumstances stated.

Medical Examination of Pensioners.

Colonel NEWMAN asked the Minister of Pensions whether he would see that the assessment committees encouraged medical officers employed in the Ministry to get men who had recovered off the pension list and men who were permanently disabled and in a final and stationary stage on to the list for permanent pension; and was he aware of the grievance felt by men who were aware that they could not recover at being brought repeatedly before an assessment

committee for examination, and of the fact that each examination entailed a substantial cost to the taxpayer.—Mr. MACPHERSON replied: I am aware of the facts stated, and I am entirely in sympathy with my hon. and gallant friend. I have, in fact, already anticipated his suggestion in the War Pensions Bill which is now before hon. Members, and which is down for second reading to-morrow.

Appeal Tribunals.

Lieut.-Colonel Sir FREDERICK HALL asked the Minister of Pensions what was the number of cases awaiting hearing by the pensions appeal tribunal on March 31st and June 30th, respectively; whether, in view of the very important nature of their work, the appeal tribunals would sit constantly through the summer vacation; if so, what number; and how many of these would be in the London region.—Colonel GIBBS (Treasurer of the Household) replied: The number of cases awaiting hearing by the pensions appeal tribunals on the dates mentioned was as follows:—

—	March 31st, 1921.	June 30th, 1921.
Listed and in course of being heard	1134	3071
Outstanding awaiting listing for hearing	7734	6779
	8868	9850

Of the total number of cases awaiting hearing approximately 1000 are cases in which the appellants have already been afforded one or more opportunities of appearing before a tribunal. During the latter part of May and in June additional courts were set up and 1000 cases are now being dealt with each week. Further tribunals are in course of formation. Tribunals will sit constantly through the summer vacation. The number of tribunals to sit in August and September has not yet been arranged, but approximately 16 will sit during August and 12 during September. The number of tribunals to be allocated to London for the holiday period will depend upon the state of the work in London as compared with other regions.

International Health Organisation.

Sir J. D. REES asked the Lord President of the Council if he would give the House some information as to the recently announced determination of the League of Nations to look after the health of the world, the manner in which this enterprise was to be conducted, and the probable cost to the taxpayers of this island.—Mr. BALFOUR replied: In pursuance of Articles 23 and 25 of the Covenant the League is proceeding, as it is bound to do, to set up an International Health Organisation. At the present moment the arrangements are in the initial stage only. Great Britain makes a lump sum contribution towards the expenses of the League, no part of it being ear-marked to particular branches of the League's work.

League of Nations and Typhoid in Poland.

Lieut.-Colonel Sir FREDERICK HALL asked the Lord Privy Seal how many countries belonged to the League of Nations; what was the estimated cost of maintaining the League for the current financial year; and what part of such cost would be borne by Great Britain.—Mr. BALFOUR replied: Forty-eight States are at present members of the League of Nations. The Budget of the League covers the calendar year, and for 1921 amounts to 21,250,000 gold francs, or, quoted in sterling, reckoning 20 gold francs to the £ about £1,062,500. Great Britain's contribution is approximately £52,000—the exact amount will depend on the rate of exchange current at the time that the instalments are made.—Sir J. D. REES: Does the £52,000 include such benefactions as the money granted for dealing with typhoid in Poland or will that necessitate an extra budget?—Mr. BALFOUR: I think it is inclusive, but I do not think it includes what my hon. friend calls benefactions.

Financial Position of Irish Hospitals.

Mr. DEVLIN asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been drawn to the annual report of the board of superintendents of the Dublin hospitals issued last week; whether he was aware that the report stated that the board were satisfied that all the hospitals were conducted in an economical and thoroughly efficient manner, but that all were in a more or less critical condition financially; whether he was aware that the indebtedness of each hospital was as follows: Westmoreland, £7946; Meath Hospital and County Dublin Infirmary, £6688; Cork Street Fever Hospital, £5882; House of Industry Hospitals, £5843; Rotunda, £5014; Coombe, £4355; Royal Victoria Eye and Ear, £7500; Royal Hospital for Incurables, £7279; and whether he would take immediate action to have grants made to these and to other hospitals in Ireland out of the £500,000 which had been allocated for the relief of voluntary hospitals in the United Kingdom or an equivalent grant to relieve their financial difficulties.—Sir H. GREENWOOD replied: I am aware of the facts and figures disclosed in the report of the board of superintendents of Dublin Hospitals for the year ending March 31st, 1920, but in regard to the mode of relieving the financial condition of the hospitals I can only refer to my right hon. friend the Chief Secretary's reply to my hon. friend the hon. Member for Rathmines of June 30th last. The hon. Member's figures need a small correction in one item—namely, the figure of £7946 is that for Stevens Hospital, not for the Westmoreland Hospital. The latter hospital has, I understand, no deficit.

Pharmacists and Dangerous Drugs Act.

Mr. ALFRED T. DAVIES asked the Secretary for the Home Department whether he was aware that the committee appointed to consider outstanding objections to the draft regulations issued under the Dangerous Drugs Act, 1920, after considering the claim that prohibition of retailing by pharmacists was ultra vires in view of Section 7 (2) of the Dangerous Drugs Act, and observing that the point could only be settled by a competent judicial authority, proceeded with their inquiry as if the contentions were not well founded; and whether he had since obtained, or proposed to obtain, the opinion of the Law Officers of the Crown on this contention of the pharmacists.—Mr. SHORTT replied: The answer to the first question is in the affirmative; to the second, in the negative.

FRIDAY, JULY 8TH.

War Pensions Bill.

Mr. MACPHERSON (Minister of Pensions), in moving the second reading of the War Pensions Bill, said it was a measure for securing administrative economy, but not at the expense of any pensioner, for that was a policy to which he would never be a party. The number at present on the pension list was as nearly as he could make out 3,500,000 beneficiaries of all kinds. It was the unanimous proposals of the Departmental Committee, which he had appointed in December last to examine the large and intricate machine of pensions administration, which he was presenting in the form of a Bill to the House. These proposals he believed would be to the best interests not only of the taxpayer, but of the pensioner and of the State. The expenditure of the local war pensions committees out of public funds was over £20,000,000 a year, but the committees were virtually independent bodies over which as Minister of Pensions he had no control. That position was quite intolerable. The local committees had now drifted into an entirely false position. In 1917, when the Pensions Ministry was formed, the staff of the local committees amounted to 300; to-day it had grown to nearly 7000 and the voluntary workers were comparatively few. In nine cases out of ten the expenditure of the local committees was now left to the discretion of these paid officers, and the result was that there was laxity, and even fraud, in the expenditure. During the past seven months the Ministry discovered no fewer than 126 cases of fraud by officers. In these circumstances he thought he ought to be responsible for the appointment of those men. He proposed to reduce the number of the local committees from 1200 to not more than 450, thus getting rid of about 800, and effecting what he regarded as large economies. Under the new scheme there would be large areas of administration, each having at its centre an office with a war pensions committee attached to it. In some sparsely populated districts of the country, such as his native Highlands, it would be necessary to appoint only a local man as officer without a committee. The committees and the officers of the different areas would be directly under him as Minister, and he should feel himself responsible for the financial and administrative work of the offices. He hoped to appoint in each office a "soldier's friend" to give advice to ex-Service men in regard to pensions, a departure which in London had proved most valuable. The composition of the new committees would be substantially the same as it was now, but there would be somewhat different proportions of interests. Instead of one-half the representation of the local authority would be only one-fourth, for the reason that the local authority did not any longer contribute to pension funds. He would take upon himself the power of appointing the local committees. In future it would be made perfectly clear that the staffs of the local committees were State servants. Under Clause 2 the committees would retain all their powers under the Act of 1915 except with regard to the provision of medical treatment and employment. The committees having been relieved of all executive responsibility for the making of medical and other administrative arrangements, or for any expenditure under the warrants or regulations of the Ministry, would be able to devote their time to voluntary work and voluntary administration of pensions in their own locality. With regard to the question of

permanent pensions, which was the most important point of policy in the Bill, he proposed to make the fourth year after the man's discharge the date at which a man should be finally examined for permanent pension. It was in the interests both of the disabled men and the State that the machinery of the Ministry should be reduced as soon as possible to its minimum, so that within a measurable time all that would be left would simply be a system of regular payments through the Post Office. The present system with its periodical examination of men involved an elaborate structure of medical boards, referees, and so forth. The medical machinery of the Ministry had hitherto involved the employment by the Department for whole-time or part-time of one man in every four or five of the medical population of the country. The periodical examination of disabled men and officers meant annually the equivalent in working time of a strike of 20,000 men. But more important than all was the effect that finality would have on the mind of the man who had been harassed by medical boards and the relief he would feel at getting away from the atmosphere of the war and its disabilities. But there were insuperable obstacles in the way of granting a great many permanent pensions. Where a case was clear, such as in the case of amputation, he gave permanent pension, but any other permanent pensions which he gave now meant a one-sided process. A pensioner if he got worse could come back and get an increased pension, but if he got better the Minister had no right of appeal. The fixing of four years after discharge had been arranged under the advice of the Government actuary. If a medical board when examining for final pension was satisfied that a man might get worse he proposed to instruct them not to make the award permanent, so that the man might get the benefit of the doubt.

He also proposed to set up an independent appeal tribunal, composed not of a lawyer, an ex-Service man, and a doctor, as at present, but of two doctors (one of whom would be president of the court), an ex-Service man, and an officer. Any discharged man would have the right to be examined in the fourth year for permanent pension by this independent tribunal. On a conservative estimate he hoped to save £2,000,000 a year in administration alone. If a man became seriously worse after his permanent pension had been given to him he (Mr. Macpherson) still retained the right which he had under Article 6 of the Royal Warrant, and even if the claim had been finally settled a man would be entitled to hospital treatment and to certain allowances, and those privileges he would retain for the rest of his life. The Ministry might have said to the men who left the Army without medical examination that they could not go into their claims for pensions afterwards, but they had not done so, and under Article 9 they had given a right to every man who had served in the British Army, even though he had not been examined on discharge, to come before a medical board and have all the rights of a man who was examined at the time of his discharge. The House would realise that that was a privilege which could not be open to all men always. He had decided to fix the limit for appeal at seven years after service. If they did not have a final limit of that kind they would have to keep up permanently the medical boards, the appeal tribunals, and all the paraphernalia with which the Ministry was associated. The independent tribunal which was in existence now had the right to hear all cases of discharged men, but he was asking the House in this Bill to place a time-limit on the right of appeal of six months, because otherwise the pensioner would become forgetful, papers would be lost, and they would find that the man's disease, if he had a disease, was changed, and all sorts of conditions would be superinduced. In Subsection (2) of Clause 5 he was making it quite clear what procedure was necessary in order to effect a right judgment in any appeal case. In Clause 6 he was taking the same power of commuting the disability pensions of seamen and marines as he had already in the case of soldiers and airmen. In regard to Clause 7 there were some boards of guardians which objected to the Minister of Pensions being the guardian of an orphan of a soldier or sailor. Of course, he could not get back from boards of guardians cases of epilepsy and imbeciles, but he was taking powers to get those children whom the Ministry could take charge of under its control. He would listen to any reasonable amendment to the Bill in Committee, but naturally he would stand by the principles which he had endeavoured to set forth.

In reply to Colonel ASHLEY, Mr. MACPHERSON said that as a conservative estimate the economies in administrative expenses resulting from the doing away with the 800 committees would be anything from £6,000,000 to £12,000,000.

Mr. LAWSON, in moving the rejection of the Bill, explained that he did so in no hostile spirit. The Labour Party did not really desire to see the Bill thrown out, but wanted to call attention to the financial and administrative powers of the new committees. The Minister proposed to reduce local committees to the same position and degree of impotence as the present old-age pension committees. He was opposed to any time-limit for permanent pensions.

Mr. C. EDWARDS, another Labour Member, seconded the amendment.

Major ENTWISTLE supported the Bill and urged that it was not a measure to set up a new bureaucracy. The bureaucracy was there already; the only question was whether they should be controlled by the local committees or by the Ministry who supplied the funds.

Colonel F. E. FREMANTLE, after narrating personal experiences of the fraudulent methods which had been employed for the securing of pensions, commented warmly on the fact that out of 21 members of the Departmental Committee there was not a single medical man. He added that while it was quite right for the State to obtain finality, if it should prove that in 10 or 20 per cent. of the cases finality was unfairly secured, it would be a serious matter. He pointed, for example, to the recurrences occurring in mental cases and in tropical diseases, such as malaria. He asked for provision to be inserted under which final awards should be subject to reconsideration in ten years' time.

Major TRYON (Parliamentary Secretary to the Ministry of Pensions), replying to the debate, pointed out that the medical question was one of great magnitude. At the present moment there were 125,000 officers and men on the hands of the Ministry for treatment as the result of wounds or sickness. It was not altogether realised that this task had been put on the Ministry quite lately as the result of the transfer of wounded and sick from the Navy, Army, and Air Force on demobilisation. Lieut-Colonel Fremantle's proposal that final awards should be liable to revision after ten years would mean the resurrection of the whole machinery of medical boards, &c., which they were so anxious to get rid of. He did not think that such a suggestion was in the interests of the pensioners or of economy.

The second reading of the Bill was agreed to without a division.

Drunkenness Statistics.

Sir J. D. REES asked the Home Secretary the number of convictions for drunkenness which occurred during the first 26 weeks of 1921 in the City of Carlisle where direct control of the liquor trade was in operation, and in the remainder of the areas scheduled by the Central Control Board (Liquor Traffic) in England and Wales, together with the figures for the corresponding period of 1920.—Mr. SHORTT replied: I understand that complete figures on all the points raised by the hon. baronet are not available. But the following table with which I have been supplied covers the main points on which he desires information:—

Convictions for Drunkenness in Carlisle and the Rest of the Scheduled Areas of England and Wales.

—	23 weeks 5th Jan.–13th June, 1920.	23 weeks 3rd Jan.–12th June, 1921.
Carlisle	44	72
Rest of scheduled areas of England and Wales ..	41,309	32,224

MONDAY, JULY 11TH.

London and the Water Shortage.

Viscount CURZON asked the Prime Minister whether, in view of the present shortage of water and of the fact stated in the press that there was only three weeks' supply of water remaining for the metropolis at the present rate of consumption, it was the intention of the Government to take such action as would compel economy generally in the use of water during the present shortage.—Sir A. MOND replied: I have been in constant communication with the Metropolitan Water Board in regard to the great need for economy in the use of water in consequence of the continued drought, and the steps taken by the Board have resulted in an average daily reduction in the week ending July 1st of 37 million gallons below the figure for the corresponding period last year. This is due largely to the assistance of the press and the ready coöperation of the public. I shall not hesitate to take further action to compel economy should this be necessary.

Medical Boards and Disability Pensions.

Rear-Admiral SUETER asked the Minister of Pensions whether the medical boards had had instructions from the Ministry of Pensions to cut down disability pensions by 10 to 20 per cent.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: No, Sir. Nor is there any prospect of my right hon. friend being induced to attempt economy by such means, as he has already made it abundantly clear that he will be no party to the issue of any such instructions.

Blind and Paralysed Ex-Service Men.

Mr. HANNON asked the Minister of Pensions the number of ex-officers and men of the Navy, Army, and Air Force,

respectively, who were totally paralysed through wounds received in action, and who were so helpless as to necessitate their remaining in hospital; in how many of these cases the paralysis was permanent; and what was the number of ex-officers and men of the Navy, Army, and Air Force who were blind as a result of wounds received in action.—Major TRYON replied: There are 258 totally paralysed officers and men in hospital, but I am unable to say how many of them cannot be expected to recover. There are 1453 officers and men who are totally blind as the result of their war service. Of these 739 were blinded by wounds received in action.

Clinical Thermometers.

Mr. BALDWIN, President of the Board of Trade, introduced a Bill to regulate the sale of clinical thermometers. The Bill was read a first time.

TUESDAY, JULY 12TH.

Treatment of Bilharziasis.

Mr. GRATTAN DOYLE asked the Minister of Pensions whether, in view of his recently expressed sympathy with the proposed treatment of pre-recent war sufferers from bilharziasis by the Christopherson treatment, he would inform the House of the result of his communication with the Secretary of State for War on this subject.—Major TRYON replied that the necessary arrangements were being made to provide the modern treatment for men still suffering from bilharziasis contracted as a result of their service in former wars.

Conference on Treatment Bonuses.

Mr. ALFRED DAVIES asked the Minister of Pensions whether, on May 27th, 1921, a conference was held between the Ministries of Pensions, Health, and Labour on the question of the bonuses to be paid to men undergoing training during their treatment in sanatoriums; whether, having regard to his previous statements in respect of payment of such bonus, he would state whether the conference recommended any difference of procedure with regard to this matter; and whether he would say how many men who had undergone training arranged by the local insurance committee during a course of treatment had been paid the bonus prior to the date of the conference.—Major TRYON replied: One of several conferences on the matter referred to by my hon. friend took place on the date in question. The character of the training in individual sanatoriums which would satisfy the conditions necessary for the payment of bonus was discussed and agreed, and effect is now being given to the conclusions arrived at. I regret that the information asked for in the last part of the question is not available.

Ministry of Health and Sanatorium Treatment.

Mr. WALTER HALLS asked the Minister of Health whether he had refused to allow the Lancashire Insurance Committee of the National Health Insurance to assist the county council financially from their credit balances in providing and equipping a new sanatorium to make further provision for the treatment of insured persons and their dependants; and, if so, would he state the grounds for this refusal.—Sir ALFRED MOND replied: I presume the hon. Member is referring to the action taken by my department in connexion with the proposal of the Lancashire Insurance Committee for the application of the estimated surplus standing to the credit of the Sanatorium Benefit Fund of the Committee on April 30th last. The disposal of that surplus is governed by the provisions of the National Health Insurance (Termination of Sanatorium Benefit) Regulations, 1921, and I am unable to sanction any departure from those Regulations. Substantial grants are available from the Exchequer in aid of the provision made by the Lancashire County Council for the sanatorium treatment of tuberculosis.

Appointments.

BEGGS, S. T., M.D., D.P.H., has been appointed Medical Officer of Health for Middleton.

WALKER, H., M.B. Cantab., F.R.C.S. Eng., to be a Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuits Nos. 2 and 15.

WARBURTON, G. B., Ch.M. Manch., F.R.C.S. Eng., Assistant Surgical Officer, Manchester Royal Infirmary.

Surgeons under the Factory and Workshop Acts: NEIGHBOUR, P. M., M.R.C.S., L.R.C.P. Lond. (Walton-on-Naze); BRUCE, R., M.D. Aberd. (Peterculter).

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne District Infirmary.—H.S. £200.
Ayr County Hospital.—Lady Supt.
Bedford County Hospital.—H.S. £200. Asst. H.S. £150.
Birmingham General Dispensary.—Res. M.O. £400.
Birmingham General Hospital.—Res. S.O. £180.
Bootle Borough Hospital, Derby-road.—Hon. S. for Diseases of Throat, Nose, and Ear.
Bristol, Cossham Memorial Hospital, Kingswood.—Res. M.O. £200.
British Honduras.—Asst. M.O. $2430.
Brompton Hospital for Consumption and Diseases of the Chest, S.W.—H.P. £50.
Cancer Hospital, Fulham road, S.W.—H.S. £150.
Carlisle Non-Provident Dispensary.—Res. M.O. £300.
Croydon General Hospital.—Second H.S. £150.
Cumberland Infirmary, Carlisle.—Res. M.O. £180.
East Suffolk and Ipswich Hospital.—H.S. and Cas. Officer. £100.
Great Northern Central Hospital, Holloway, N.—Cas. O. £200.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Guy's Hospital, S.E.—Chief Clinical Asst., Ophth. Dept. £100. Also two Female Clinical Assts. in Ven. Dept. One guinea per session.
Hull Royal Infirmary.—Asst. H.S. £150.
Jersey Poor House Infirmary.—M.O. £750.
Lancashire County Asylum, Winwick, Warrington.—Sec. Asst. M.O. £300.
Leeds Public Dispensary.—Sen. Res. M.O. £200.
London Temperance Hospital, Hampstead-road, N.W.—Surg. Registrar. 40 guineas.
Manchester Ancoats Hospital.—H.S. £150.
Manchester Hulme Dispensary, Dale-street.—Res. M.O. £400.
Miller General Hospital for South London.—H.S. £150.
Ministry of Pensions.—Jun. M.O.'s. £350.
Newcastle-upon-Tyne, University of Durham College of Medicine.—Demonstrator of Anatomy. £350.
Newport (Mon.) Royal Gwent Hospital.—H.S. £200.
Northamptonshire County Council.—Asst. Tuberculosis Officer. £500.
Nottingham General Hospital.—H.S. £200.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—District Res. M.O. £80.
Queen's Hospital, Birmingham.—Surg. Registrar. £100.
Reading Royal Berkshire Hospital.—H.P. £200. Sec. H.S. £200.
Royal Naval Medical Service.—Surg.-Lieuts. 26*s.* 6*d.* per diem.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. £100.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. M.O. £200.
Saint Pancras Dispensary, 39, Oakley-square, N.W.—Hon. P. or S.
Salford Royal Hospital.—H.S. £150. Cas. H.S. £150.
Salisbury General Infirmary.—Asst. H.S. £150.
Sheffield University.—Demonstrator in Department of Pathology and Bacteriology.
South London Hospital for Women, Clapham Common, S.W.—H.P. £100. H.S £100.
South Shields Union.—Asst. Res. M.O. £250.
Stirling District Asylum, Larbert.—Jun. Asst. M.O. £300.
Talgarth, Breconshire South Wales Sanatorium.—Sec. Asst. Res. M.O. £400.
Union of South Africa (Natal Provincial Administration).—House Surgeons, Grey's Hospital, Pietermaritzburg. £400.
Wigan Infirmary.—Jun. H.S. £200.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
Worcester County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

The Chief Inspector of Factories announces the following vacant appointments.—Senny Bridge (Brecon); Swinton (Lancaster).

The Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Middleton-in-Teesdale.

Births, Marriages, and Deaths.

BIRTHS.

EDE.—On July 5th, at West Hill House, Calne, Wilts, the wife of Dr. Cuthbert Ede, of a daughter.

WELCH.—On July 3rd, at West Norwood, the wife of Dr. C. H. Welch, of a daughter.

WESTBY.—On June 27th, to J. T. Westby, M.B., B.Ch. and Marjorie Westby, L.R.C.P. & S.I. (neé McMullen) 9, Redcliffe Gardens, Southsea, a son.

MARRIAGES.

COLDWELL—SMITH.—On June 29th at St. James Church, Piccadilly, W., by the Rev. Prebendary Cronshaw, M.A., Walter Herbert Coldwell, M.B., B.S., to Barbara Joan Smith, younger daughter of Mr. and Mrs. A. E. Smith, The Quarry, Warwick.

MILLS—HAWES.—On June 29th, at St. Paul's Church, Portman-square, W., Dr. R. J. Mills, of Norwich, England, and Langenschwalbach, to Enid Ida Hawes, of Melton Constable, Norfolk. American papers please copy.

DEATHS.

BATSON.—On July 5th, at Marine-terrace, Rodwell, Weymouth, William Lascelles Batson, M.R.C.S., L.R.C.P., aged 69 years.

BLOMFIELD.—On July 8th, at The Drive, Sevenoaks, James Edward Blomfield, M.A., M.D. Oxon., aged 64 years.

RAY.—On July 8th, at Coventry House-chambers, Haymarket, after a long illness, Edward Reynolds Ray, M.R.C.S. Eng., L.S.A., aged 79 years.

SAVAGE.—On July 5th at h's residence, 26, Devonshire-place, Sir G. H. Savage, M.D., F.R.C.P., aged 78.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Monday, July 25th, at 5.30 p.m.

Lecture and Demonstration: Dr. M. Diamond: On Some New Phases of Old Problems in Dental Reconstruction.

Tuesday, July 19th.

GENERAL MEETING OF FELLOWS: at 5 P.M. Ballot for election to the Fellowship.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, July 18th.—2.30 P.M., Dr. A. Saunders: Visit to Medical Wards.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. 2.30 P.M., Mr. Addison: Visit to Surgical Wards.

WEDNESDAY.—2 P.M., Mr. Addison: Operations. 2.30 P.M., Mr. D. Armour: Visit to Surgical Wards.

THURSDAY.—2 P.M., Mr. D. Armour: Operations.

FRIDAY.—2.30 P.M., Mr. Baldwin: Operations. Dr. Pritchard: Visit to Medical Wards.

Daily, 10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, July 18th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. J. B. Banister: Gynæcological.

TUESDAY.—9.45 A.M., Lt.-Col. R. H. Elliot: Eye Operations and Cases. 2.30 P.M., Dr. J. Metcalfe: X Ray Department. 3 P.M., Lecture Demonstration:—Mr. C. H. Hayton: Cases Illustrating Diseases of the Ear—(1) Middle Ear; (2) Internal Ear.

WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Dermatological. 3 P.M., Lecture Demonstration:—Mr. T. H. C. Benians. The everyday Bacteriology of the Sputum.

THURSDAY.—2 P.M., Mr. N. Fleming: Eye Department. 2.30 P.M., Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: Radiology.

FRIDAY.—2 P.M., Dr. C. E. Sundell: Diseases of Children. 4.30 P.M., Lecture Demonstration:—Dr. C. E. Sundell: Dyspepsias of Infants. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

SATURDAY.—10.30 A.M., Mr. W. E. Tanner: Operations. 3 P.M., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Post-Graduate Course, Westmoreland-street, Marylebone, W.

MONDAY, July 18th.—11.15 A.M., Demonstration (Laboratory and Clinical): Dr. B. T. Parsons-Smith. 2 P.M., Ward Demonstration: Dr. R. O. Moon. 5 P.M., Lecture:—Dr. F. W. Price: Auricular Flutter and Fibrillation.

TUESDAY.—11.15 A.M., Demonstration (Laboratory and Clinical): Dr. P. Hamill. 2 P.M., Ward Demonstration: Dr. B. T. Parsons-Smith. 5 P.M., Lecture:—Sir Sydney Russell-Wells: Angina Pectoris.

WEDNESDAY.—11.15 A.M., Demonstration (Laboratory and Clinical): Dr. P. Hamill. 5 P.M., Lecture:—Dr. J. Parkinson: Diseases of the Myocardium.

THURSDAY.—11.15 A.M., Demonstration (Laboratory and Clinical): Dr. R. O. Moon. 2 P.M., Ward Demonstration: Dr. J. S. Goodall. 5 P.M., Lecture:—Dr. P. Hamill: Cardio-vascular Neurosis.

FRIDAY.—11.15 A.M., Demonstration (Laboratory and Clinical): Dr. P. Hamill. 2 P.M., Ward Demonstration: Dr. F. W. Price. 5 P.M., Lecture:—Dr. R. O. Moon: Prognosis in Heart Disease.

SATURDAY.—10.30 A.M., Ward Demonstration: Dr. P. Hamill.

Daily (except Saturday):—10 A.M., Sir Sydney Russell-Wells and Dr. J. Parkinson: Instruction in Instrumental Methods of Examination, Blood Pressure, Polygraph, Electrocardiagraph, and X Ray. 2 P.M., Out-patients, Practical Clinical Demonstrations in the Out-patient Department.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

A Course of Twelve Practical Demonstrations on the Management and Feeding of Infants and Young Children by Dr. E. Pritchard to Qualified Practitioners.

TUESDAY, July 19th.—10.30 A.M., Demonstration XI., Rickets, Causes, Symptoms, and Treatment.

THURSDAY.—3 P.M., Demonstration XII., The Feeding of Children between 9 months and 2 years.

VOCAL THERAPY SOCIETY.—On Saturday, July 9th, at the West End Hospital, St. Catherine's Lodge, Regent's Park, a competition concert was given by the King's Services Choirs, which consist of ex-Service singers in and out of hospital. The work of the Vocal Therapy Society, under whose auspices the concert was held, is the endeavour to restore physical and mental health to ex-Service men suffering from loss of speech, mutism, stammering, stuttering, &c., resulting from war injuries or shell shock. The office of the Society is at 27, Grosvenor-place, S.W.1.

Notes, Short Comments, and Answers to Correspondents.

MATERNITY HOMES.[1]

BY DR. JANET M. CAMPBELL,
SENIOR MEDICAL OFFICER, MINISTRY OF HEALTH.

THE Ministry of Health have now recognised between 60 and 70 maternity homes in England and Wales, with about 700 beds, and some 20 proposals for new homes are under consideration. This is in addition to maternity beds found in homes for unmarried mothers, and to old-established maternity hospitals and Poor-law lying-in institutions.

The Need for Maternity Homes.

The great reduction in the infant mortality-rate which has taken place during the past 20 years has not been accompanied by a corresponding lowering of the maternal mortality rate, as is shown by the following table:—

Year.	Birth-rate.	Death-rate.	Infant mortality-rate.	Maternal mortality ‖ (Classification as in use before 1911).			
				No. of deaths.	Deaths per 1000 births.		
					Sepsis**	Other causes.	Total child-birth.
1905	27·3	15·3	128	3905	1·87	2·33	4·20
1906	27·2	15·5	132	3757	1·75	2·27	4·02
1907	26·5	15·1	118	3520	1·60	2·23	3·83
1908	26·7	14·8	120	3361	1·48	2·09	3·57
1909	25·8	14·6	109	3379	1·56	2·14	3·70
1910	25·1	13·5	105	3191	1·42	2·14	3·56
1911	24·3	14·6	130	3236	1·52	2·15	3·67
1912	23·9	13·3	95	3299	1·47	2·31	3·78
1913	24·1	13·8	108	3271	1·34	2·37	3·71
1914	23·8	14·0	105	3469	1·63	2·32	3·95
1915	21·9*	15·7†	110	3210	1·56	2·38	3·94
1916	20·9*	14·4†	91	3038	1·47	2·40	3·87
1917	17·8*	14·4†	96	2446	1·39	2·27	3·66
1918	17·7*	17·6†	97	2353	1·35	2·20	3·55
1919	18·5*	13·8†	89	2852	1·76	2·36	4·12
1920	25·4	12·4	80	3942‡	1·87	2·25	4·12

* Based upon populations specially estimated for this purpose.
† Based upon civilian deaths and estimated civilian population.
‡ Subject to slight alteration.
‖ Excluding deaths not classed to pregnancy and childbearing, but returned as associated therewith.
** Including phlegmasia alba dolens.

Note.—In the Registrar-General's Annual Report for 1920 the birth-rates and the death-rates, 1911–1920, will be based upon revised estimates of population made after the results of the next Census become available. The rates in the Registrar-General's Report may differ, therefore, from those in the above table.

In 1900 the infant mortality-rate was 154 per 1000 births and the maternal mortality-rate 4·8, the total number of maternal deaths due to pregnancy and childbearing being 4455. In 1920 the infant mortality-rate had fallen to 80, but the maternal death-rate was 4·2 with 3942 deaths. During the earlier years of the century there was a slight though fluctuating improvement in the maternal death-rate, 3·5 per 1000 births being the lowest figure reached. In 1919, however, the Registrar-General reported that puerperal mortality was higher than for any year since 1905 and that the increase was *preponderantly due to sepsis*. This was sufficiently arresting, but it is still more disquieting to learn that in 1920 there has been no decrease in the maternal death-rate, which remains, as in 1919, at 4·12 per 1000. The death-rate from septic infection in 1919 was 1·76, but in 1920 it was still higher, being 1·87, the same rate which obtained in 1905. In other words, in spite of our modern knowledge of the causes and prevention of infection, of the successful application of this knowledge to the practice of surgery, and of the elaborate training given to medical students and nurses in surgical technique, we are, as regards midwifery, almost back in our old position at the beginning of the century before the Midwives Act was passed.

Most maternal deaths at the time of childbirth are preventable if proper facilities and reasonable skill are to hand, and deaths from septic infection should be rarely met with. Sepsis is almost invariably introduced from without by one or other of the attendants on the woman, the doctor, the midwife, or the handywoman. Every

[1] Abridged from a paper read at the second English-Speaking Conference on Infant Welfare on July 5th.

vaginal examination with imperfectly cleansed fingers is fraught with danger, every forceps delivery is a potential source of sepsis either because the forceps are not used under aseptic conditions, or because lacerations may be caused which allow the entry of infection. Thus in 1920, 3942 women died and a much larger number were injured, many of them permanently, from causes which are almost entirely avoidable. It is a matter of common knowledge that a large proportion of the patients in gynæcological out-patient departments seek advice because of the effects of bad midwifery, and that much of the chronic ill-health from which so many working-class mothers suffer may be traced to the same cause. Such facts are a grave commentary upon the standard of midwifery practice in this country. The majority of those women might have been saved suffering and even death if the needful facilities had been available for their treatment and if practitioners of midwifery were better instructed and more alive to their responsibilities.

The Ministry of Health are anxious to do all that is possible to encourage effort to combat this regrettable and unnecessary loss of life and health. Action may be directed —first, (*a*) towards improving the midwifery service in the homes of the people by ensuring more skilled and careful professional attendance, and (*b*) by providing a supply of sterile equipment and appliances for those who cannot afford to pay for them. Secondly, it is also essential to increase the accommodation in maternity homes and hospitals so that all mothers requiring in-patient treatment may be able to obtain it and may be assured of safe and cleanly methods of delivery, while the obstetrician may be in a position to practise any operative measures which are needed unhampered by the difficulties inevitable in the private house. Thirdly, there is the need for a study of the physiology of normal pregnancy, labour, and lactation, our knowledge of which is far from complete, and this was one of the reasons for the establishment of such an institution as the Kaiserin Augusta Victoria-Haus in Berlin as long ago as 1909. A sufficient number of maternity beds, therefore, is one of the most important requirements of a complete midwifery service.

Until recent years almost the only accommodation besides the maternity hospitals in some of the large towns was to be found in Poor-law institutions and in private nursing homes. Maternity hospitals were unable to admit even all cases from their own districts, and many parts of the country were entirely unprovided.

Some Advantages of Small Homes.

After careful consideration the Ministry decided to encourage the establishment of maternity homes of, say, 10–20 beds, for normal and slightly abnormal cases rather than hospitals for larger numbers, fully equipped to deal with any complications. First, because of the initial expense involved; secondly, existing maternity hospitals already deal with many of the seriously abnormal cases; for the rest, a physiological rather than a pathological atmosphere should be the aim, and is more acceptable to the women. Further, it is desirable that maternity beds shall be accessible from the homes of the women they serve.[2]

General Requirements.

Maternity hospital construction is in a more or less experimental stage, but some general guidance being immediately necessary a Memorandum[3] was issued in January, 1920, dealing with construction, equipment, and organisation, an endeavour being made to simplify the design and eliminate redundance and extravagance while insisting upon the minimum requirements for safety. The Memorandum was concerned mainly with new buildings, but the recommendations were intended to apply as far as practicable to the alteration of existing houses.

The maternity home should contain wards for lying-in patients (some of which may suitably be one, two or three bed wards), one, or preferably two, labour-rooms, a pre-maternity ward, a duty-room, a receiving-room with bath-room, properly fitted sink-rooms, a nursery, a laundry, and separation or isolation-rooms, in addition to staff quarters. It should have an ample supply of hot water; there should be central heating and electric lighting; not less than 15–20 beds should be provided when possible, as smaller homes are more costly to maintain efficiently in proportion to the work done.

Patients are usually delivered by midwives, medical aid being called in as and when necessary. It is often convenient to arrange that several local medical practitioners shall be invited to deal with emergencies, but it is important that the clinical supervision of the home as a whole shall be vested in one medical officer, who will be responsible for the general standard of the midwifery practised and for the admission and discharge of patients. Whenever practicable a consultant medical officer should also be appointed. The matron should be a trained nurse as well as an experienced midwife, and even in a small home should have at least one fully trained assistant. It is difficult to lay down a precise rule as to the number of additional staff required, but there should not be less than one nurse or pupil for every three mothers and babies by day and for 8–10 mothers at night, in addition to labour room and special staff.

[Dr. Campbell then gave as examples of typical arrangements of well-organised maternity homes particulars of the Queen Mary's Maternity Home, Hampstead; St. Mary's Hostel, Croydon; Lewisham Municipal Maternity Home; and the Sunderland Maternity Home.]

Separate provision for antenatal care is unfortunately rare, though expectant mothers are sometimes admitted to the ordinary wards of a maternity home. A pre-maternity home was established in Liverpool in 1915 in connexion with the Maternity Hospital; the home contains 12 beds for pre- and post-natal care. It is in charge of a trained nurse-midwife and pupils from the hospital spend six weeks of their training there. The hospital is thus relieved of patients for whom it is not primarily intended, and the pupils gain much valuable experience of ante-natal hygiene.

As a rule patients suffering from venereal disease cannot be admitted to maternity homes because of the difficulty of effective separation. In some cases, however, special provision has been arranged. For example, in the Sunderland Maternity Home, already mentioned, in the Endsleigh Street Maternity Home, London (five beds and a labour ward), and in the Municipal Maternity Home recently opened in Battersea (five beds and a labour ward).

Limitations of Adapted Buildings.

It is relatively simple to plan a new building, but it has been found extremely difficult to adapt satisfactorily and cheaply the large mansion which is usually suggested as an ideal maternity home. The dangers of incompletely equipped maternity homes are frequently overlooked, and with every desire to make no unreasonable demands the Ministry have then the ungrateful task of criticising and apparently discouraging schemes which have been passed locally as satisfactory.[4]

One of the chief difficulties is to secure separation accommodation for cases of puerperal sepsis. There should be at least one single room reserved for cases suspected of infection. Although one can insist on an infected woman being removed from a maternity home for the sake of the remaining patients, it is no easy matter to find a place to send her where she will be skilfully treated. The alternatives are usually the workhouse or a fever hospital, neither of which is satisfactory for the reception of a patient dangerously ill and needing advice and treatment by an obstetrician. In view of the high mortality from puerperal infection this is a matter which demands the early and careful consideration of local authorities. The following suggestion offers a satisfactory solution in one case. It is proposed that a small ward in the local fever hospital shall be set aside for septic cases from the neighbouring maternity home and the district round, but that the maternity home and not the fever hospital shall be responsible for the nursing and treatment of all patients admitted.

Results.

In order to check the results obtained in maternity homes, the Ministry require immediate notification of all maternal deaths which occur, and an annual return showing the results of the work as a whole. The following table summarises returns made by 50 unselected homes for the year 1920 under certain headings, and the figures are of

[2] The arrangements proposed in Wiltshire may be quoted as illustrating a scheme for providing maternity beds in a rural county where in-patient accommodation is needed for women suffering from the ordinary emergencies of pregnancy and labour, and also for patients living in remote districts where neither doctor nor midwife can be obtained. It is suggested that there shall be five small centres rather than one home for the whole county, three to six beds being subsidised in existing homes or hospitals at Salisbury, Malmesbury, Swindon, Corsham, and Calne. The fact that the beds are associated with other hospital or maternity provision meets the usual objections to the independent two or three bed maternity home which is so difficult to supervise properly and economically.

[3] Memorandum in regard to Maternity Homes and Hospitals, with plans. M.C.W.15.

[4] To take some examples of this: A home was provided containing one ward large enough for three beds and one bedroom for the midwife in charge. There was no labour-room, no sanitary convenience, except in the yard, there was a movable bath in the ward from which water ran off by means of a drain in the floor, there was no means of sterilising dressings, &c., or of separating patients. In another case, besides insufficient staff accommodation, there was no reception-room, no duty-room, no sink-room or hospital sluice, no nursery, no milk larder, no sterilising plant and no separation-room, while the labour-room was small and had no special equipment. The importance of maintaining surgical cleanliness in the labour-room is not always understood. In one home, for instance, the labour-room had papered walls and rugs on the floor; in another, the only hospital sluice was fitted there; in a third it was proposed to utilise it also as an operating theatre for the removal of tonsils and adenoids from school children.

interest, though not comparable with any statistical returns from the country as a whole :—

No. admitted to home.	Average stay.	Cases delivered.		Notified puerperal sepsis.		Ophthalmia neonatorum (number).	Maternal deaths.*	Fœtal deaths.†
		By midwives.	By doctors.	Number.	Deaths.			
9108	14 days.	6835	1844	28	10	74	57	583

* Including puerperal sepsis.
† Stillborn or within 10 days of birth.

Among 9108 women admitted, 28 cases of puerperal sepsis occurred and there were 57 maternal deaths, including 10 from puerperal infection. When ante-natal supervision is more fully developed it may confidently be hoped that the maternal mortality and the fœtal mortality will be considerably reduced. At the same time it must be remembered that a maternity home, like a maternity hospital, may be obliged to admit moribund patients for whom little can be done, and that more claims are made upon some homes than upon others to admit cases which should rather be sent to a hospital if such were available.

Conclusion.

The secret of the success of a maternity home does not lie only in convenient accommodation, modern equipment, and a competent staff. There must indeed be a conscientious application by the staff of the principles of aseptic midwifery, with no slurring over of details, and with accurate observation and recording of results. But this is not enough to satisfy a high standard. The mother coming into the home should experience a sense of calm relief, and should instinctively feel assured of a successful issue. Wisdom in the management of labour is essential ; the mother must not be allowed to become fatigued or exhausted before the final trial of strength and control becomes necessary. The patient should only leave the home when well on the way to complete physiological restoration, feeling rested and refreshed. Breast-feeding should be regarded as a matter of course. Such an atmosphere is almost wholly personal, depending on all concerned in the management of the home, but most of all upon the matron and the inspiration she can give.

Properly directed and used, the maternity home will undoubtedly serve as one of the most effective weapons in the endeavour to raise the standard of midwifery and so reduce the disastrous death-rate among mothers. Rightly conceived, it forms one link in a chain. Standing alone, its activities are restricted, but in relation on the one hand with the ante- and post-natal clinic, and on the other with a maternity hospital (or medical school) and its consulting staff, in touch with the district midwifery of its own area and available for the local medical practitioner, its value as a treatment centre and as an example and incentive to sound midwifery practice can hardly be over-estimated. For well-managed midwifery secures something more than immediate safety ; it serves as a means of encouragement to the whole instinct of maternity. Thus established and thus related a maternity home becomes an institution of the highest national importance, first, for the safe delivery of the child and the proper treatment of the mother, and secondly, for the advance of the science and art of medicine.

A GUEST HOUSE FOR MOTHERS AND BABIES.

A Guest House, available for breast-feeding mothers and their babies, the families of unemployed or disabled ex-Service men, was opened on July 13th by the Duchess of Albany. The institution has been organised and financed by the National League for Health, Maternity and Child Welfare, and the Save the Children Fund. It is called the Lady Forster Guest House for Mothers and Babies, and is situated in pleasant surroundings at Peak Hill Lodge, Sydenham, London, S.E. Only those mothers and babies are admitted who are not definitely ill, but would benefit by a change of air and good food. Guests must have attended an infant welfare centre at least twice before admission, and applications for admission must be made through the local medical officer of health or through a centre ; a medical certificate must be submitted the day before admission. Guests pay their own fare to and from the home, but no charge will be made for their stay, which may extend up to four weeks. All applications for admission should be addressed to Miss Reed, Secretary, Babies' Homes Department, National League for Health, Maternity and Child Welfare, 4 and 5, Tavistock-square, London, W.C. 1, from whom further particulars can be obtained.

MEDICAL GOLFING SOCIETY.

AT the annual general meeting, held on June 29th at the Florence Restaurant, Rupert-street, Dr. Rolf Creasy was elected President of the society, and Dr. Rolf Creasy, jun., 36, Weymouth-street, London, W., secretary and treasurer. The following constitute the committee: Mr. H. D. Gillies, Dr. J. Clarke, Dr. G. E. Haslip, Dr. M. J. Bulger, Mr. T. H. P. Kolesar, Dr. R. Cruise, Sir Milsom Rees, and Mr. Joscelyn Swan. It is proposed to hold an autumn meeting in addition to the usual summer one, for competition, at which Mr. Canny Ryall has presented a challenge cup. The President has also presented a cup, and Mr. Ernest Clarke will give a small cup each year to be kept by the winner.

NATIONAL COUNCIL OF PUBLIC MORALS.

A BRIEF outline of the objects and work of the National Council has been published in the form of a 48-page booklet entitled "To Save the British Race." A preface is contributed by the Bishop of Birmingham, president of the Council, and the chapters deal with the action and reports of various commissions appointed by the Council to inquire into such problems as those of birth-rate, illegitimacy, and venereal disease. The chapter headed "The Health of the Race" contains statistics epitomising the returns of the medical boards of the Ministry of National Service in 1917–1918, and figures drawn from the medical inspection of public elementary schools, from National Health Insurance returns, and from the general death-rate for the country, together with a note on housing conditions and a suggestion for the inclusion in the Ministry of Health of a permanent anthropometric department, a vocational bureau, and an office of general registry of population. "Youth and the Race," "The Family and the Race," "An Imperial Race," and "The Amusements of the Race" are headings sufficiently indicative of the wide scope of the National Council's activities and the amount of information compressed into this useful booklet.

A MEDICAL MAN'S INVESTMENTS.

A MEDICAL practitioner recently brought an action against several defendants for the recovery of £375 which he had been induced to invest with them by representations of a misleading character as to the value of certain enterprises. These included interests in radium mines in Portugal, and processes for the production of an explosive, aniline dyes, and petrol from coal. The alleged fraud was denied by the defendants, who said that they had made their representations in good faith and that they were true. After a trial lasting three days a special jury found a verdict for the plaintiff, who to that extent is to be congratulated. In comment it may be observed that investments that will bring in large profits with any degree of security are very seldom offered to the public by the promoters of attractive speculations. It is they who expect to obtain the lion's share of the profits if any are forthcoming. A professional man will find the advice of his stockbroker or banker a valuable protection if he consults them. All this is so obvious that to write it appears unnecessary, until it is remembered that medical men and clergymen appear to be particularly gullible. Finance is outside their sphere of thinking.

County Borough of Halifax : Appointment of Medical Officer of Health.—In the advertisement of this appointment, which appeared in our issue of July 9th, the salary was wrongly stated as £1000. The salary offered is £800 per annum.

RUBBER sheetings and other productions treated by the "Mintite" patent finish, on which we commented last week, are obtainable from india-rubber manufacturers only and not from the owners of the patent.

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